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**THE THEORY OF  
SOCIAL ECONOMY**

**VOL II.**



# THE THEORY OF SOCIAL ECONOMY

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**BOOK III**  
**MONEY**



## CHAPTER IX

# ANALYSIS OF THE MONETARY SYSTEM ON THE BASIS OF ITS EVOLUTION

### § 39 *The Origins of Money*

THE origin of money is most intimately connected with the development of exchange of goods, and exchange itself is a comparatively late outcome of economic evolution. Long before it had become the general custom to exchange goods, it was possible in various ways to obtain commodities from other communities. They might be acquired by robbery, for instance, or they might be more or less regularly secured in the form of tribute by the exercise of some kind of authority. The custom of giving and returning presents has been of direct significance in the evolution of exchange.<sup>1</sup> It is only reasonable to expect that the present made in return should bear a certain relation to the present given, and it may be safely assumed that such relations were fixed and recognised by custom at very early stages of development. It would then be possible to stipulate a certain return-present in advance, and so the needs of exchange were able for a long time to be satisfied in the old form of present and return-present. Wherever exchange had developed into a normal economic procedure, it was conducted for a long time according to traditional standards, which, perhaps, had

<sup>1</sup> We get a good idea of the frame of mind which is at the root of this custom from the ancient Scandinavian poem "Havamal" (in the earlier Edda). It runs :

Never did I find a man so generous,  
Or so hospitable,  
That he would not take what was offered him;  
Or with his treasures  
So lavish to his friends  
That hateful to him was the reward he received.

With weapons and garments  
Do thou gladden thy friend,  
And the like will be done to thee,  
With gifts and return gifts.  
Friendship grows old.

been defined by the priesthood or other high authorities. The paying of tribute of various kinds made it necessary, at a very early stage, to draw up tariff schedules of the various commodities accepted in payment. For it is clear that, as a rule, the various peoples, or tribes, or separate communities, would have to be allowed to pay the tribute in those commodities that they were best able to produce.

For these two reasons, schedules fixing the relative values of different commodities are economic necessities which must have made themselves felt in the earliest stages of the development of forms of exchange. That such schedules actually did exist is shown from ancient inscriptions, as well as from those primitive economic systems which have survived down to the present day. Probably the custom soon arose of settling the value of various commodities by reference to a "standard commodity." This might be done either by establishing that a unit of the standard commodity should be equal to so many units of the other commodities; or by taking a unit of each of the other commodities as equal to so many units of the standard commodity. However, in primitive conditions the valuation of commodities by reference to a standard commodity is carried out only for distinct and separate groups of commodities, and each of these groups has its own standard commodity. In early stages of cultural evolution, the very natural feeling predominates that commodities of great value should not be exchanged for others which are of considerably less worth. Thus, for example, it is said that in Africa ivory could be exchanged for certain highly valued goods, but not for others whose value was considerably less. This idea retained its influence long after the development of a money economy, as is shown by Mercantilist policy.

Although the earlier schedules for the valuation of commodities fell into various separate parts, the necessity of uniting these incomplete schedules into a coherent whole gradually made itself felt. This was attained as soon as definite ratios of value were established between the various standard commodities. Thus there resulted a uniform scale of reckoning, by means of which the value of all goods could be estimated. These scales of reckoning often consisted

of a whole series of units which were connected with each other by simple numerical relations.

Ridgeway reproduces a scale of this sort, with five different units, from Annam.<sup>1</sup>

|                |                     |
|----------------|---------------------|
| 1 slave (male) | = 6 or 7 buffaloes. |
| 1 buffalo      | = 7 jars.           |
| 1 jar          | = 4 <i>muk</i> .    |
| 1 <i>muk</i>   | = 10 <i>mats</i> .  |

The meaning of the word *muk* seems to have been lost, and it is now merely a unit of account. The smallest unit, the *mat*, was an iron hoe used in agriculture. All other commodities were reckoned in terms of these five units, and occasionally several of these units would be employed in succession in order to express a precise value: for example, 1 good sword = 1 jar, 1 *muk*, 3 *mats*. Of course, the existence of such a scale of reckoning does not prove in itself that the most valuable commodities were exchanged for the cheapest. It was, however, a formal unified scale by means of which the value of all sorts of commodities could be reckoned.

The use of different units to express the value of dear and cheap commodities has obstinately persisted through all stages of the development of an exchange economy. The division of our modern currency systems into marks and pfennigs, francs and centimes, etc., originates from this custom. The three units of the English coinage are a particularly good example of the persistence of this point of view from ancient times.

Each unit of such a scale of reckoning must necessarily be an abstract unit of account. Thus, if a value is expressed in dried fish, the calculation must be based on fish of "average size and quality," or some other definite standard. A store of one hundred fish does not then necessarily represent a hundred fish in the sense of the unit of account. This is still more apparent when we consider what is by far the most important of such units of account – that is, cattle. When "an ox" is used as a unit for reckoning value, it perforce

<sup>1</sup> Ridgeway, *Origin of Metallic Currency and Weight Standards* (Cambridge, 1893), pp. 23–4.

obtains a purely abstract meaning. A real ox, just like other commodities, will be valued in these units, and in greatly varying amounts, since even primitive people compute the value of an ox very exactly according to its age, etc. The abstract nature of the unit of account can clearly be seen in those cases where the unit chosen has entirely lost its original meaning. In the Hudson Bay regions, payment was made for a long time in "skins." Skins originally were taken to mean a beaver pelt, but gradually the unit of account took on the fixed value of two shillings, while the real beaver pelts were probably valued higher.<sup>1</sup> Not infrequently, the original meaning of the unit of account has been completely forgotten, as we saw in the case given above.

*The sum at which a commodity is valued in such an abstract unit of account is clearly a price. The unit is a price unit, and the whole scale of reckoning is a price-scale. Thus, the calculation of price is from the beginning a calculation in an abstract unit, which has always an independent existence, detached to a certain extent from the standard commodity.*

Whenever a scale of reckoning of this type is drawn up, the numerical valuation of commodities is obviously made easier, and so furthers the extension of exchange. This development of barter must, in its turn, give more scope to the scale of reckoning and strengthen the position it holds in the mind of the community. This barter and the scale of reckoning develop hand in hand, and there has probably never existed anything like a developed barter trade without a scale of reckoning.

When the value of commodities is expressed in terms of a common unit of account, an exchange may take place such that, first, the prices of the two commodities to be exchanged are fixed, and then the goods in question will be exchanged in such quantities as will yield the same price for both; that is to say, such quantities as will represent the same number of units of account. The transaction then falls into two separate acts, which have to a certain extent the character of a purchase and sale: *A* buys from *B* the commodity *b* for the sum *p*; at the same time *B* buys from *A* the commodity *a*

<sup>1</sup> Jevons, *Money* (London, 1899), p. 21.

for the sum  $p$ .  $A$  then pays the sum  $p$  by delivering the goods  $a$ , which  $B$  has engaged to accept for the sum  $p$ . Here, however, the buying and selling transactions are still bound up together. They have not the complete freedom which will only be attained when they take place quite independently of each other.

In unilateral transactions – taxes, fines, etc. – the scale of reckoning serves to fix the extent of the obligation. It is by no means necessary that the payments should be made in the standard commodities of the scale. It is more usual, rather, for the debtor to be allowed to pay in certain other goods, or even *in quo potuerit*.<sup>1</sup> Of course, these other goods must have definite values in the scale of reckoning.

Thus the scale of reckoning may play an important part both in exchange and in unilateral transactions, without it being necessary for the standard commodities to be utilised in their material form.

When one country sells its products in another country, where it cannot obtain in payment any commodities that it needs, the purchasing country may be able to give in settlement a commodity for which there is a demand in a third country. This commodity will then be taken in payment and exchanged in the third country for some other commodity, perhaps, which the first country greatly values. This country then obtains possession of the goods it really desires by means of an *indirect exchange*. The detour described is the only possible way of attaining the object, when there is no demand in the third country for the goods produced by the first, or when the demand is so small that the seller would obtain no advantage through a direct exchange. Hence indirect exchange must greatly extend the possibilities of exchange, and so be most instrumental in promoting barter.

Although indirect exchange is of prime importance from this point of view, it would, however, be incorrect to regard it, and the use of means of exchange, as constituting in themselves the beginnings of a monetary system. For in a real monetary system there must be a *common* medium of exchange, that is, a commodity which

<sup>1</sup> Cf. Bücher, *Die Entstehung der Volkswirtschaft* (1904), p. 131.



will be used by *all* as a medium of exchange, and which will therefore be regularly accepted in settlement for other commodities.

General media of exchange seem to have come gradually into use in connection with the development of calculation in prices. It is certain that the introduction of general media of exchange can never precede calculation in prices, for the reason that the use of a general medium of exchange presupposes a price-schedule in this self-same medium, except in so far as other price-schedules do not already exist. It is not vital that the general media of exchange should be identical with those standard commodities which are the basis of the price-schedule. The need for some standard commodity to serve as a unit in calculating prices, and the need for a general medium of exchange, are two distinct necessities of economic life, and they may be met in different ways. Indeed, the qualities demanded of a general medium of exchange are in part different from those demanded of a standard commodity. If a commodity is to develop spontaneously into a general medium of exchange, it must be in itself an object of general demand. When the commodity has already been elevated to a general medium of exchange, and is commonly recognised as such, it necessarily acquires a new value in virtue of its new property. The essential qualities demanded of a general medium of exchange are three; it must be easy to *store*, easy to *transport*, and easy to *divide*.

If a commodity is to be taken in exchange merely to be used later for exchange with another commodity, it must clearly be one that is easily stored. It must be such that everyone can take it and store it without any special difficulties or arrangements. This requirement naturally takes on a different interpretation in different stages of economic development. Among pastoral peoples, one can generally say that cattle will be accepted by every household, but this is by no means the case among more advanced peoples who practise division of labour. The property of general storability postulates also a permanency, which, carried to its highest degree, amounts to indestructibility.

That a general medium of exchange must also be easy to carry about is obvious. The requirement of transportability brings with it,

in its more refined stages, the requirement also that large values should be represented by objects of as small a weight as possible. This can be achieved only when the commodity serving as a medium is at the same time one of great rarity.

Finally, divisibility is an essential requisite of a general medium of exchange, for if it is to carry out its object it must be capable of being delivered in any desired quantities. Perfect divisibility includes among its qualities that of uniformity, guaranteeing as it does that pieces of equal size may be treated as being identical in value.

The necessity of having all these requirements embodied in a common medium of exchange makes one realise how it is that, though commodities may be chosen as standard for the price-schedule, because of their high economic importance, it does not follow that they will always be found suitable as media of exchange, and other commodities will have to perform that function to some extent. We have already seen that cattle, which was the most important and most general standard commodity of primitive stages of culture, is not suitable as a medium of exchange for more advanced stages, because of its defective "storability." It does not at all fulfil the requirement of divisibility, and its transportation, especially by sea, must for a long time have been on a very small scale.

It is only natural, under such conditions, that, as soon as the need for a general medium of exchange was more strongly felt, the old major units of the price-schedule were not chosen to fulfil this want, but, instead, other commodities – especially metals, and, above all, precious metals, were employed. From what has already been said, the special advantages of the precious metals as general media of exchange are quite obvious. In addition, their use for ornament gave them that general attractiveness which alone in primitive stages of culture raises one commodity to the position of a general medium of exchange, and makes it easy to understand why the precious metals have come to be preferred to all others as such media. At the same time, other metals, especially copper (bronze) and iron, were used to represent the smaller values.

If commodities other than the standard commodities of the price-schedule are to be used as general media of exchange, their value must be expressed in the then obtaining price units; that is to say, they must have a generally recognised price. In view of the great stability of prices in primitive economic systems, this requirement is probably as a rule easily fulfilled. The regulations made by the priesthood and other high authorities as to which goods will be accepted in discharge of existing unilateral obligations have probably been of great importance in fixing the value of suitable media of exchange.

As soon as a general medium of exchange is expressed in the existing price-schedule, it obtains the character of a *general medium of payment*. It is now possible, thanks to a general medium of payment, to carry through the sale of a commodity as an isolated transaction. The obligation which the purchaser assumes – that of accepting the goods in exchange for a certain sum reckoned in price units – can now be directly carried out, without it being necessary for the sale to be completed by a purchase to the same amount. The normal method of transferring goods is now the one-sided method, in which the rendering of an equivalent value consists of a *payment*. Also, all one-sided obligations can now be met by payments made in the general means of payment.

When the use of general means of payment becomes well established, it is natural that the old price units should lose their connection with the standard commodities and gradually become abstract units for estimating values. The economic significance of these price units is clearly determined through the general price-level, and is fixed to the extent that the price-level is stationary. But the valuation of the general medium of payment has an especial influence on the value of the unit of account, in so far as this valuation is subject to the arbitrary decision of some ruler. When a definite "*legal tender power*" is assigned to a certain means of payment – that is to say, when it is provided that obligations to pay in the existing price unit shall be met with a certain means of payment according to a definite ratio – this must ultimately influence all prices, and thereby also give a new material significance to the

price unit itself. As soon as a State reserves to itself the right of regulating the means of payment, the economic significance of the price units becomes, in the long run, completely dependent on the value that is ascribed to one or other of the means of payment.

The price-schedule and the general means of payment together make up the *monetary system*. Thus the monetary system has arisen from two natural requirements of trade by what was probably a very slow process of development. This development has no doubt kept pace with the development of exchange at all its stages. Already in the earliest sources where there is mention of trade we find a price-schedule, and there is no doubt that the general media of payment were in use wherever trade got beyond the elementary stage. Even in later stages, the development of barter was never in advance of the monetary system. When, finally, in the nineteenth century, barter, driving out the old self-contained patriarchal system, set up a developed barter economy in its place, this only occurred in conjunction with a further great development in the monetary system.

This attempt to reconstruct analytically the main lines of evolution of the monetary system receives a good confirmation in the account that Ridgeway gives of the corresponding development which took place in the ancient world. This distinguished scholar informs us that the ox was for thousands of years a chief unit for the settlement of prices in the whole of the Mediterranean region, from the Atlantic Ocean to Central Asia. At the same time, sub-units were used, such as the sheep, and possibly a slave (whose value equalled three oxen) was used as a higher unit. It is at a quite early date that other commodities, the metals, came into use as general means of exchange or payment. In the earliest stages, metals were valued according to their bulk. They were drawn out into bars, and measured with a unit of length derived from the human body. Gold was used as an ornament in the form of bracelets (often spiral-shaped), but, if necessary, it was also used as a means of payment, the form making it easier to estimate the different amounts. To facilitate their use as means of exchange, the

metals were moulded into pieces of a definite size in the shape of rings, nails, needles, etc. The first weights were grains of wheat and other seeds, as is demonstrated by the English unit of weight, the "grain," and the "carat" (which signifies *keration*, the seed of the carob), still used in weighing gold. It is particularly noteworthy that gold was always measured in a unit which corresponded to the value of an ox. This unit had a weight of about 130 grains troy (= 8.4 grammes). Even before measurement by weight was invented, gold was probably shaped into pieces which represented the value of an ox. The system of weighing then simply adhered to this tradition, and the first unit of weight was that piece of gold which has been regarded since the earliest times as the gold unit, and which represented the value of an ox.

There can be no doubt that this quantity of gold was used as a medium of payment in the much older price-schedule founded on the ox unit. The custom of counting in "oxen" was long retained, and the ox-scale was turned into a purely abstract scale of reckoning, the original meaning of which was probably entirely lost, real oxen being priced by it and paid for in gold. In such circumstances it is natural that the quantity of gold which represented an ox should be known as an "ox," and that the name should be retained after the quantity of gold in question had been given the form of coin. The essential feature of the development was that a definite quantity of gold, the value of which was taken to equal that of an ox, was generally recognised as a medium of payment with a fixed value. This power of payment was made legal when the power of the State developed. In the course of these changes the connection of the unit of account with the live ox was lost.

Other metals have also been used as means of payment in quantities which were suitable for the earlier units of account. In Rome, for instance, copper was used, 100 *as* representing the value of an ox, and 10 *as* the value of a sheep.

The conception of a monetary system is necessarily connected with the existence of a scale of reckoning, and also with a medium of payment reckoned by this scale. With the presence of these two

elements, a monetary system already exists. Lack of clarity on this point is largely responsible for the unsatisfactory treatment which money received at the hands of archæological and ethnographical research; undoubted indications of money were not recognised as such, and so its early evolution was, for the most part, ignored. It is greatly to be desired that the attention of investigators should be more sharply drawn to cases exhibiting the existence of a money economy, as well as to those showing signs of the use of a means of payment. In this first respect, the system of book-keeping should be especially noted, as it is developed even in the earliest stages of primitive society that have been discovered by archæologists. As soon as such a system of book-keeping is carried on in terms of a common denominator, a system of money-reckoning exists. With regard to the second point, special attention should be devoted to the use of ornaments of exactly uniform size, or having an easily measured shape, as such ornaments have been probably used also as means of payment.

Recent research has shown that the system of money-reckoning reached a suprisingly high standard even in early civilisations. In ancient Babylon payment was made by means of orders drawn on credit balances, even for distant places. This system of payment was actually so highly developed that it must be regarded as a genuine system of payment by cheque. Highly developed, also, was such a system of cheque-payment in ancient Egypt, on the basis of grain stored in the big granaries. We know, too, how actively trade, on the basis of payment in uncoined pieces of metal, manifested itself. Gold, either in the form of rings or spirals, was by no means such a primitive medium of payment as people to-day are inclined to think. Actually, the use of gold as a means of payment in the form of rings or spirals was so popular that it persisted for more than a thousand years after the invention of coins in the seventh century B.C. It is easy to understand why the Nordic people, in their relations with Mediterranean peoples, after discovering the variety and complications of the then existing monetary system, still preferred to employ gold as a means of payment in the shape of rings and spirals. Such "ring money" has also been found in large

quantities in Swedish soil. The diagram gives a good representation of the use of this money for payments in different amounts.

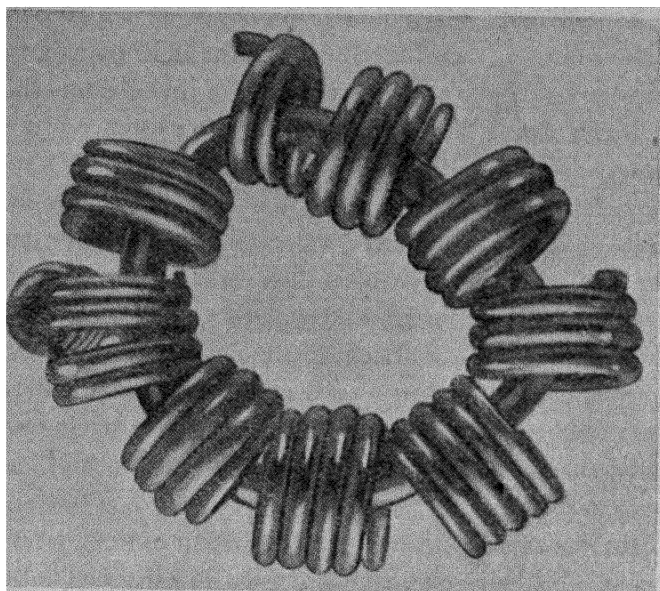


FIG. 1.—RING MONEY.

It might be disputed which of the two elements of the monetary system is the more important. The scale of reckoning could probably claim precedence, on the ground that it is possible to have an estimate of value in terms of a definite unit of account,<sup>\*</sup> and this may serve as basis for an exchange of goods, although there is no general medium of exchange or payment; whereas the creation of the latter necessarily presupposes the general use of a unit of account. However, both elements are definitely indispensable to our existing monetary system, so that a comparison of their relative importance is out of the question.

The theory of money has directed its attention mainly to the analysis of the nature of *money*. As, however, money was primarily conceived as a material commodity, the material medium of payment has been given undue prominence. It was asked what characteristic requirements had to be fulfilled before an object

could be defined as money, in this material sense. It is clear that the concept of money must be defined not by the properties of any particular thing, but with reference to its essential functions. It follows from this conception that the analysis must be brought to bear directly on the essential functions of money. It is the co-ordination of the institutions which fulfil these functions that constitutes the monetary system. The question of what is to rank as material money is only of secondary interest. It can be answered in the most general sense by saying that every general medium of payment which is recognised as such is "money." Nevertheless, it is clear that the monetary character of such a money is the more strongly pronounced the more exclusively it is used, or is capable of being used, as money – that is to say, the more the "money" divorces itself from the "commodity."

For theoretical economics, our analysis of money has a special significance. Just as the fixing of prices is a primary practical need of every system of exchange, so also must the fundamental treatment of the theory of exchange be carried through as an analysis of the determination of prices. It has been shown in the first two Books of this work that such a theory can be worked out as a theory of the determination of prices without it being necessary for special attention to be devoted to the part played by the existing means of payment. The analysis of the origin of the monetary system shows that this rôle, by its very conception, is distinct from the part played by the price-scale. For the purposes of theoretical treatment, it is natural that the part played by the means of payment, and especially its significance for the price-scale, should be made the object of a special inquiry. This gives us the task of Book III.

#### § 40 *The Minting of Money and its Significance*

When once the use of metals as a means of payment had been established, the creation of *coinage* was sure to follow. This development was due to two important advances. In the first place, at a very early date, even before the invention of the weighing scale, the metals were made into pieces corresponding to the units of account or fractions and multiples thereof, in order to facilitate



payment. Secondly, the need was felt of stamping the pieces of metal in order to indicate and guarantee their weight and fineness, so as to avoid the constant process of weighing and assaying, which was always troublesome and, for most people, quite impossible.

Each of these advances was in itself important enough; but it is the combination of the two which was of decisive and one might even say, of epoch-making importance. It led to the appearance of *coinage*.

The introduction of coinage marks a new stage in the history of money. It would be wrong, however, to regard the whole development of the monetary system as being solely or principally that of a history of coinage, as people were formerly inclined to do. First, as has been demonstrated above, the monetary system is thousands of years older than the institution of coinage. Secondly, the development of money after the Great War has gone in the direction of doing away with the use of coins as full-bodied money. Probably the use of coins as the basis of the monetary system will be henceforth a closed chapter in the history of money.

As a result of technical improvements, it was gradually possible to attain an increasing uniformity in the minting of coins, so that variations between different coins could be confined to a very small proportion of the whole. The stamping developed until it extended over the whole surface of the coin, so that every holder could verify whether the coin had retained its original metal content.

For practical purposes, it is of fundamental importance that the various coins of the same denomination should be taken indiscriminately in payment. This ideal of reciprocal equivalence in value, or "fungibility," of the circulating coins has been gradually attained by the methods mentioned.

In the earlier stages it was possible only through legislative authority to require that individual coins should be ranked equally as means of payment. The State early reserved to itself the right of minting coins, and gave the coins a certain power of legal tender in a definite scale of prices. All coins, irrespective of their denominations, receive this quality of legal tender, as long as they are recognised by the legislature as being valid. In payment transactions,

therefore, no attention need be paid to variations in single coins of the same denomination. In cases where the coins are used as metal, a distinction will most likely be made among coins according to their metal content, but as long as they remain coins they are to be regarded as identical.

This legal identity of the coins is of supreme significance. The price-scale, as we saw, is always reckoned in units supposed to be identical. By means of coinage a material medium of exchange is created, possessing the same validity as that of the unit of account of the price-scale.

The currency unit is named either after the old unit of account or after the weight of the metal (mark, pound, lire), or from some chance reason. The word "crown" is very expressive, since it emphasises the minting authority of the State. Assuming that the currency unit is called a crown, and also that the price-scale will be based on this unit, then in the country in question all prices will be expressed in crowns. As always happens to the units of a price-scale, the crown will also become a purely abstract and independent unit of account without having a direct or necessary connection with its original material basis. The connection between the price-scale, that is the reckoning in crowns, and the means of payment is established by the legislative enactment that debts in crowns shall be paid by the coins called crowns. Through its power of determining what shall be legal tender, the State has complete control over the price-scale, and can materially alter its actual significance, though maintaining its formal identity.

In the course of time, such changes have been constantly occurring. As bad coins rank equal with the good ones, there is always the temptation to debase the coinage and thereby make a profit. In spite of such currency debasements, carried out for thousands of years by those in authority, the identity of the price-scale could generally be maintained. Furthermore, the State has at times replaced the metal which should serve as the basis for the price-scale by another metal, without, even then, destroying the identity of the scale. A case in point is the modern change-over from the silver standard to the gold standard. The State, indeed, can deprive

the price-scale of any metallic basis, and declare paper notes to be legal tender, and still maintain the legal identity of the price-scale.

In this development, the price-scale, as always, appears as an abstract scale of reckoning, which is only more definitely fixed through establishing a medium of payment which is to have a settled purchasing power in it. When we tackled the problem of the general fixing of prices in Book I., we reckoned all prices in a common abstract unit. We found then that prices as a whole were determined except for a multiplying factor. This signified that only the relative values of different prices could be determined by price-fixing in an abstract scale of reckoning. The fixing of prices in absolute amounts presupposes that, besides the internal equilibrium requirement of the pricing process, prices are subject to another condition which gives them a relation to money. Such a condition obtains when a certain means of payment receives a definite purchasing power in the price-scale. It is, however, required of the means of payment that there shall be a certain limit to the supply of it for the purposes of trade; that is, that the means of payment should be relatively scarce. When once this requirement is met, the determination of the legal tender value of the means of payment is clearly sufficient to do away with the arbitrariness of the pricing system with regard to the absolute price-level and, in this sense, to fix the price-scale. Thus the economic significance of the unit of account is primarily dependent on the scarcity of the means of payment recognised as legal tender in the price-scale.

When coins are recognised as being means of payment, the significance of the unit of account is determined by the limitation of the supply of these coins. As the coins are not only employed as means of payment, but can also always be used as metal, a distinction is drawn between their *metal value* and their *nominal value*. The relation which exists between the nominal value and the metal value is always of great importance in a monetary system of this kind, and hence the factors determining this relation deserve particular attention. The relation obviously determines in what form the coins are to be used. The metal value cannot exceed the nominal value, as then the coins would be melted down and used as

metal. It is certainly true that, in exceptional cases, when such a process is effectively forbidden, the nominal value can fall below the metal value. On the other hand, the nominal value can, under certain conditions, exceed the metal value, because the State, as minting authority, can restrict the amount of coinage.

As the mint price of the coins is formally fixed by their legally established validity in the price-scale, their value obviously cannot be expressed in this scale as a price. All that concerns us here is that the relation between the nominal and the metal value has a definite significance. Clearly, it is determined by the ratio of the quantity of the metal offered on the market for the coin, to the quantity of the same metal contained in the coin. In other words, the ratio between metal value and nominal value may be defined as the price of the metal in terms of the current price unit.

If we wish to give the general factors which determine the nominal value of the coin, we must assume that it is not convertible into another coin, and does not acquire its value from that other. For the sake of formal simplicity it is assumed that the coin represents the unit of price.

We must distinguish three cases:

I. Let us suppose that the circulation consists of a single medium of payment of completely homogeneous quality. If there is a certain scarcity of this medium, its exchange value may possibly rise above its intrinsic value. When, however, the medium is available in sufficient quantities, its exchange value must sink to its intrinsic value. It is obvious that a surplus of coins which cannot be used in payment for transactions can then only be valued as metal. On this supposition, however, the nominal value must equal the metal value. For the nominal value to rise above the metal value, there must be a sufficient scarcity of the means of payment, which thus causes demanders for money to offer more than the value of the coin's metallic content. Experience has repeatedly confirmed that such a scarcity of the means of payment may exist, with the result that they are valued above their intrinsic value.

II. Let us imagine, secondly, that two media of payment *A* and *B* are present, each of which, in itself, is of homogeneous quality,

and that the same legal validity is assigned to each. Let us suppose that, of the two, *A* has the greater intrinsic value. We have now to distinguish two main contingencies. Either there is a sufficiency of medium *B*, or there is not. In the first case, the currency value of *B* will be determined by its intrinsic value. Accordingly, *A* has then a higher metallic value than nominal value, and must therefore be treated as metal. The overvalued coin is in the circumstances then displaced by the undervalued coin, and disappears from circulation. This result conforms to the so-called *Gresham's Law*, which is popularly, though not quite accurately, expressed in the phrase "Bad money drives out the good."

In the other principal case, when there is a sufficient scarcity of *B*, its nominal value can exceed its metal value. Nevertheless, the value of the price unit can be lower than that of the metal value of *A*, or it may be equal to, or even exceed it. This last contingency will clearly occur when *A* and *B* together form a supply of means of payment of sufficient scarcity.

III. Thirdly, let us assume that there is a whole series of different means of payment, in which every quality from the best to the worst is represented, and let us assume further that the need for means of payment is amply satisfied. Under these conditions, the value of the price unit will clearly be determined by the metal value of the best of the means of payment which must still be used as such in order to meet the demands of trade. Those coins having a higher metal content will be melted down and withdrawn from circulation.

Thus we find that the currency value is regulated by the principle of scarcity and the differential principle. In the latter case, the value of the currency is determined by the dearest of the coins which has to be taken into consideration. The three principles we have expounded are of useful guidance for the judgment of the various problems of the monetary system.

The creation of means of payment with a definite legal validity, and with a scarcity regulated by some means or another, gives the price-scale of a country its fixed significance on the lines we have stated. When we wish to express this price-scale in its connection

with the entire system of means of payment that are valid in it, we speak of the *standard* of a country.

By means of minting, *money* is created which is essentially only money, and from which the metal is clearly distinguished as a *good* or *commodity*. It is true that the coin can be melted down and used as metal, but then it ceases to be a coin. It may also happen that, though having the form of a coin, it can be treated as a commodity, as indeed the not uncommon use of coins as ornaments in certain countries (India) proves. On the other hand, the metal itself can be turned into coins only by means of minting, on conditions imposed by the State at its discretion. However, as the State makes minting easier and more accessible, the difference between money and metal tends to disappear. Pure money, detached from any kind of material good, is found only in the case of paper notes recognised as legal tender.

#### § 41 *The Problems of the Coinage Circulation*

The process of payment has been facilitated to a high degree by the invention of minting, and this step forward has had, without doubt, a great significance for the development of trade. But, in the first place, the use of coined money instead of uncoined metal has great disadvantages which have been completely overcome only after thousands of years of unfortunate experiences and fruitless endeavours.

The possibility of debasing the coinage, that is, minting it with a smaller metal content than originally but with unaltered nominal value, in conjunction with the continual wearing-away of the coins, has led, in all countries, to a more or less extensive and constant depreciation of the coinage. Attempts made from time to time to check the depreciation of the coinage have failed, because the problem involved was not properly understood, and also because the conditions necessary for a correct handling of the problem did not yet exist. It has only in modern times been possible satisfactorily to solve this problem of maintaining unaltered the metal content of the coinage, which may be termed the "*problem of the invariability of money.*"

Secondly, in ancient times it was not possible to bind together into a uniform system those coins which, though of the same metal, were minted in different denominations. It is of the nature of coins, if they are to satisfy the needs of trade, that they must be minted in various denominations bearing certain simple relations to each other. These unequal coins of the same currency were differently debased by wear in the course of time, so that the original relations between them were altered, and became variable. In this way, the originally unified money fell into a number of independent "varieties." This disadvantage was also clearly connected with the transition to coined money, for in the use of the uncoined metal a hundredth part of a certain weight of metal always remains a hundredth part. The disintegration of the coinage entrained with it also a disintegration of the price-scale into various independent scales, among which no definite relations could be maintained. Here, again, attempts to improve the situation were for a long time unavailing.

A similar difficulty is common to the use of coined money and the use of uncoined metal. The difficulty arises from the fact that various metals are used as a means of payment side by side, and, in view of the need to represent the most diverse sums of money, must be used in this manner. The coins minted from different metals, if they are to be combined into a unified monetary system, should have a fixed relation to each other. If the metals themselves do not provide this, then experience has shown that the fixed relation between the coins cannot be maintained without resorting to special regulations. It is not possible to bring together coins of different metals into a unified monetary system.

The two last-mentioned difficulties have only been overcome in the last century, by the solution of the big problem which may be designated as the "*problem of the single standard*." As we have seen, this problem has two sides, according as one takes into consideration one or more of the coined metals.

Progress in the field of money was greatly hindered in ancient times by political conditions. Because of the divisions existing in the organisation of the State, there were a large number of minting

authorities, each of which minted its own coins, and allowed them to fall into different varieties, even putting into circulation coins of different types. The power of the minting authority was generally not strong enough to exclude foreign coins from circulating in its own territory. The result was that the circulation consisted of a miscellaneous medley of all types of money, having no connection whatever with each other. Naturally, in such circumstances no unified scale of prices, having exclusively the recognised means of payment in it, could be maintained. Nor could as a rule, a special mint value exist, the coins being generally valued, at least in large-scale trade, according to their metal content. This condition of the monetary system, where there is no question of a standard and where the use of coined money appears to be particularly disadvantageous, has rightly been characterised by Helfferich,<sup>1</sup> under the title of *Sortengeld* (variety money), as a particular phenomenon. It was not until the rise of the modern national State, capable of maintaining a monopoly of coinage within its territory and of excluding foreign money from circulation, that the basis was created for a monetary policy on rational principles.

Such a policy demands, further, that the State shall recognise its important task in the sphere of the monetary system, and that it shall be willing to make sacrifices for this, if necessary. A conception of this nature was more or less alien to the older State, which generally saw a means of profit in the system of coinage. The progress in this part of the monetary system is probably due, in the first place, to the general development of political life.

Along with this, one must take account of the development of the technique of minting, which has rendered possible a constantly increasing uniformity in the coining of money, and which has, at the same time, reduced minting costs. Finally, of prime importance, also, has been the growing scientific insight into the nature of monetary problems.

On turning to the solution of the various problems of the monetary circulation, we must first notice, with reference to the *problem of the invariability of money*, that the *constant debasements* of the

<sup>1</sup> *Das Geld*, 2nd edition, 1910.



coinage of ancient times were not only due to the greed of the currency authorities, but were also caused by objective conditions which these authorities could not control. The difficulties which occur in this respect are of three different kinds; they arise partly from the high cost of minting, partly from the lack of uniformity in minting, and partly from the wearing-out of the coins.

The high cost of minting accounts for the readiness with which the metal content of the coins is reduced by an amount corresponding to those costs. As the currency value cannot be maintained above the metal value, it must gradually fall to this level. The next large issue from the mint leads similarly to a further fall of the value of the currency unit, and so on. The difficulty touched upon here is, however, considerably lessened by the fact that costs of minting are reduced to a minimum by the technical improvements in machinery.

Lack of uniformity in minting, which, too, was a result of the imperfect technique of coining in ancient times, also led to a depreciation of the currency, in that the best coins were picked out and used as metal. According to the third principle enunciated in the preceding section, this could happen as soon as the stock of money exceeded the demand for means of payment. Selection of this kind, which was especially practised in connection with payments abroad, clearly produced a fall in the average metal content. This unsatisfactory condition, too, has been largely remedied through the improvements in minting technique which enable coins to be produced with a high degree of homogeneity.

The means by which the modern State has succeeded in effectually stopping the steady depreciation of the coinage consists in abolishing the legal tender power of those coins which do not come up to the *required standard of fineness*.

As a rule, these coins will always be accepted by the State treasuries at their nominal value. It is by this means that the regulations regarding the standard of fineness are made effective. If it is possible for everyone to get rid of those coins which do not come up to the required standard, without making a loss, then such coins will not remain long in circulation.

The exact minting of the coins according to the legally determined metal content, the fixing of a narrow limit of wear and tear beyond which the coin loses its property of being legal tender, and the effective calling-in of coins which do not conform to the standard requirements – these are the means whereby the coins are maintained at their defined metal content, and, by so doing, ensure for the money, as far as possible, an invariable ratio of value to the metal.

When a full-bodied coinage circulation is assured in this manner, the currency value can only fall below the metal value if the use of the coins as metal is prevented, particularly if melting down is forbidden. The "*free right to melt down*" is therefore a necessary guarantee for the maintenance of the currency on a par with the metal.

The theoretical possibility of a *rise* in the currency value above that of the metal, as a result of a restricted coinage, had no practical significance in the earlier minting policies, which aimed at producing as much money as possible. The right of private persons to have the principal coins made for their own account by the State mint in any required quantities against delivery of the metal, and possibly against payment of a certain minting fee (the right which has been generally recognised in recent times, and which is known as "*the right of free coinage*"), effectively prevents any rise of the currency value of the principal coins over that of their metal content, at any rate, to not more than an amount corresponding to the costs of minting. Where, as is the case in England, no minting fees were charged, and the right of free coinage is gratuitous, the conversion of metal into coins means, at the most, a slight loss of interest. The upper limit of the fluctuations of the currency value is then greatly reduced.

The free right to melt down and the free right of coinage as supplemented by the right of unrestricted import and export of the metal are, in a full value circulation, the guarantees of the maintenance of a constant metal parity of the unit of account.

Let us now turn to the problem of the single standard, and let us first consider the case where there is only one coined metal. The three factors which have contributed to the progressive

depreciation of the coinage are particularly active in the case of the smaller coins. As the costs of minting various coins are approximately the same, they must be relatively higher for the smaller coins than for the larger. It is for this reason that the smaller coins are habitually minted at considerably less than their face value than the large coins. Also, the lack of uniformity in minting is relatively greater in the case of the smaller coins than it is for the larger. The same condition obtains with regard to deterioration from use, since the smaller coins circulate much more than the larger ones. The continuous depreciation of the metal content of the coins, caused by these factors, must necessarily occur more markedly in the case of the smaller coins. As, on account of this, the coins which were minted in different denominations from the same metal lost, in the course of time, varying fractions of their metallic content, clearly no fixed value relation among them could be maintained. Thus the original connection of the various coins of what was, at first, a single monetary system had to be severed, and the monetary system as such destroyed.

To counteract these influences and to find a means of maintaining a unified monetary system has been at all times one of the great problems of monetary policy. The problem was to find a means by which the smaller coins which could not be coined or kept full-bodied could yet be kept at their full face value. This was possible only when the minting of the smaller coins was sufficiently restricted. As a result of this, the minting of the smaller coins has been reserved to the State, and has been restricted to an amount which does not exceed the needs of trade.

In employing this method, the difficulty of foreseeing, more or less accurately, the needs of trade for the smaller coins is encountered. That modern currency policy has not been able to do this is certain. The German coinage law of 1873 restricted the issue of Imperial silver coins to 10 marks per head of the population. In 1900 this maximum was raised to 15 marks, and in 1908 to 20 marks per head. It is improbable that an exact fulfilment of the requirements for silver coins was ever achieved by these figures. When such a provision is strict enough, a time will quickly come

when the permitted circulation becomes too small, and the scarcity of the smaller means of payment will be felt irksome by traders. An exact fulfilment of the changing requirements of trade is only attained when the opportunity is given to trade of returning superfluous amounts of small coin to the central issuing offices, whilst the demand for such means of payment is always adequately met. In Germany, it fell to certain Reichsbank offices to redeem silver, nickel, and copper coins in gold coins. As long as such a redemption is effectively carried out, it is hardly possible for trade to be burdened with an excessive quantity of small coins. When, under these conditions, small coins are minted in sufficient quantities and placed at the disposal of trade, the amount of the small coins in actual circulation will always correspond to the needs of business.

The redemption of the undervalued small coins is the necessary condition for the maintenance of the uniform value of these coins in relation to the principal coins. A money, the value of which is maintained only by the State's promise to redeem it in a money of full value, has clearly the nature of a credit money. The value of such a money must, in the last resort, always be determined by the capacity and willingness of the State to fulfil its obligations.

Currency legislation has determined that such small coins shall be legal tender only to a limited extent. Coins, the intrinsic value of which is less than their face value, which have restricted legal power, but yet which can be exchanged for higher coins, are designated *token coins*. In contradistinction, these principal coins with unlimited power of legal tender are called *current coins*. As long as the State effectively redeems any surplus token coins, the limitation of the legal tender power of these coins has only the result of enabling the payee to refuse a means of payment which is too bulky and inconvenient.

Let us consider, finally, the problem of the single standard for the case in which coins of two different metals circulate together.

The relative value of gold and silver has undergone important fluctuations in the course of the last few centuries. On the whole, there has been, since the beginning of the sixteenth century, a considerable increase in this ratio, from about 11 to 1 at the

beginning of the sixteenth century to about  $15\frac{1}{2}$  to 1 in the first three-quarters of the nineteenth century, and about 34 to 1 at the end of the century. However, the rise has not been uninterrupted; in certain periods, such as the middle of the eighteenth century and also in the 'fifties of the nineteenth century, the ratio of gold to silver fell a little.

These variations in the relative value of the two precious metals were bound to cause similar variations in the relative value of gold and silver coins. As we have seen, the value of both the principal gold and silver coins could, on the whole, so long as their minting was not subject to any special restrictions, only be determined by the metal value of the respective coins. With a fluctuating ratio between the metals, a stable relationship between gold and silver coins could not be maintained. The gold and silver coins appeared as two different monetary systems, and the corresponding price-scales as two different standards. When a country, in this manner, has a gold currency and a silver currency, with free right of coinage for both, but without a fixed relation between the two, although each is recognised as legal tender in its respective price-scale, it is said that the country is on a *parallel standard*. The expression is not a happy one, because the country has really two standards.

The practical disadvantages of such a double system, which occasions constant changes from one type of money to the other as the ratio between the two varies, are perfectly obvious. It is no wonder, therefore, that great efforts were made to put an end to this state of affairs. At first, it was attempted to lay down a legal ratio between gold and silver. In this way, at all events, a single monetary system was obtained for the time being. Under this system, both gold and silver are full legal tender and are used as means of payment in a legally fixed ratio. When there is free coinage of both metals in this system, the country is said to have a *double standard*.

However, in accordance with the second of our principles regarding the coinage circulation stated above (§ 40), such a monetary system has no stability. For, as soon as the ratio of gold and silver on the open market alters, either gold or silver money will be treated as metal, and so disappear from circulation. The right of

free coinage is naturally made use of in such wise that the metal which has fallen in value will be presented for minting. As a result of the unrestricted coining of this metal, the value of the unit of account in the price-scale will be determined by the value of the quantity of the said metal corresponding to this unit. The metal which has, relatively, risen in value will, therefore, possess a higher value as metal than as money, and will thus disappear from circulation, being driven out and replaced by other metals.

It is conceivable that the legal determination of the ratio of gold to silver will exercise a certain influence on the relation between gold and silver on the open market. This is because the double standard affords a great opportunity, to the metal which has fallen in value, of being used as money, thus increasing the demand for this metal and counteracting its fall in value. The efficacy of this counter-effect is clearly dependent on the importance of the country which has a double standard, as well as, more generally, on the relationship between the monetary and industrial demand for the metal in question. These questions, however, do not concern us. It is sufficient in this connection to observe that when the ratio between gold and silver on the open market is altered, the double standard will then lose one of its two kinds of money. It is easy to see that the disappearance of the gold or silver coinage entails disadvantages which, in serious cases, may become quite intolerable. It is very inconvenient, for big business, to have to dispense with gold coins when once such a coinage has come into use. The loss of the silver money is even more strongly felt, as only with difficulty can it be replaced for small payments. It is therefore but natural that great efforts are made to get beyond the stage of the double standard.

The solution of the problem to which historical development has led consists in making gold coins only the principal coins with unlimited legal tender and with free coinage, whilst silver coins are reduced to token money, whose minting is reserved to the State. These token coins must be minted below their value to such an extent that, in the case of the price of silver rising, there is no fear of their disappearance from circulation. Currency legislation has been content with minting them at a small percentage below their

nominal value. This initially somewhat narrow margin has been considerably widened, because of the heavy fall in the price of silver since the 'seventies. The metal value of silver coins before the war was generally not more than half their nominal value.

A single standard, in which only gold coins are unlimited legal tender and in which there is a free coinage right for gold bullion and a free melting right for gold coins, and, in addition, freedom for import and export of gold, is called a *gold standard*. This name must not be taken as meaning that gold is the price unit of the standard. The former German gold standard was a mark currency. The unit of account was the mark – prices were quoted in marks and payment made in the same. The mark standard, which in itself was only an abstract scale of reckoning, was, however, more closely fixed, in that 279 ten-mark pieces were coined from a kilogramme of gold, and also in that these gold coins were unlimited legal tender. It is the fact of the mark standard being more closely defined by this connection with the metal, gold, that we mean to express when we call it a gold standard. Similarly, England has a pound sterling standard.

The relation between the former mark standard and gold can be best expressed by saying that the price of a kilogramme of gold is fixed in the mark-scale. The price of gold should normally be 2,790 marks per kilogramme. This price is not absolutely fixed, but it is so fixed within certain rather narrow limits. The rule set out for the minting of gold coins cannot be followed with perfect accuracy. Therefore, a certain margin of error is allowed in minting, amounting, for single coins, to 2 per mille in respect of fineness and  $2\frac{1}{2}$  per mille in respect of weight. These limits apply only to single coins; for the coinage taken as a whole, an "absolute accuracy" is required. The limit of deterioration is 5 per mille below the normal weight. If it is wished to obtain gold from coins which have been in circulation, allowance must be made for a certain average amount of depreciation in the coins. The loss may be from 2 to 3 per mille. The upper limit of the price of gold lies therefore some 2 to 3 per mille above the normal price of 2,790 marks.

The lower limit of the price of gold is determined by the costs of minting. In Germany, a minting fee of 6 marks per kilogramme was charged, and a certain loss of interest also had to be considered. As, however, the Reichsbank was obliged to accept all gold offered to it at the price of 2,784 marks per kilogramme (that is the normal price, less the minting costs), this price always fixed the lower limit of the price of gold. Thus the price of gold could fluctuate from the normal price of 2,790 marks by rather more than 2 per mille downwards and 2 to 3 per mille upwards.

Conditions were similar in other gold standard countries. In England, the normal gold price was 77*s.* 10½*d.* per standard ounce (11/12 fine). The lower limit of the gold price was 77*s.* 9*d.*, at which price the Bank of England was obliged to purchase gold at all times. The upper limit may be placed at 78*s.* in normal conditions, although higher prices were paid in isolated cases. These limits correspond to deviations from the normal price of roughly 1½ per mille in an upward and downward direction.

It might be said that an ideal gold standard requires an absolutely fixed price of gold. Such stability is, however, unattainable in practice. Any large deviation from the normal price is to be regarded as an imperfection of the gold standard. A variation upwards is to be regarded as equivalent to an imperfection of coins in circulation; a variation downwards is equivalent to the making of a minting charge. Every reduction of such variations means an advance in the direction of a consistently carried out gold standard.

The possibility of a variation in the price of gold is of theoretical significance, in so far as it shows that the price-scale has an independent existence even under a gold standard, and that the unit of account even here is a purely abstract unit, and not a definite weight of gold. The fundamental part of the former German currency system was the reckoning in marks. The unit of account, the mark, was an independent magnitude. The price-system was made up in it, and all debts were paid in it. The settlement of prices in such a unit is, however, restricted by the fact that it must not cause the price of gold to fluctuate beyond certain limits. The variations in the price of gold under a gold standard have also a practical



significance, as we shall see when studying international payments (§ 60).

The gold standard was introduced by England at the beginning of the nineteenth century, and since the 'seventies it has been gradually adopted, first in the Western European countries, and then all over the world. In certain countries, however, people did not want to do away entirely with the full legal tender power of silver money. Thus in France, the silver five-franc piece retained its property of being full legal tender for any amount. Although this silver money was not convertible, as a rule it maintained its parity with the gold currency, even though, for making payments abroad, a small premium was generally paid for gold money. That this parity should be possible is due to the scarcity of the silver money, which was very far from satisfying the need for means of payment. But as gold must always be in demand, the value of the currency is determined by the metal value of the dearer coins (see our second principle on the coinage circulation). A gold standard in which an inconvertible silver currency with full legal tender power is retained, is known as a *limping standard*.

The sharp fall in the price of silver which has taken place since the 'seventies as a result of greatly increased production of silver, and the relative contraction of the monetary uses of silver as a result of the change-over to a gold standard, has led to certain efforts to "rehabilitate" silver on the part of those interests which have been injured by the fall. These efforts were supported by those people who saw a proof of the inadequacy of gold as the sole standard metal in the fact of the increasing scarcity of gold and the fall in the general price-level which was undoubtedly provoked thereby. These efforts culminated in the demand for a restoration of the double standard on an international basis. It was held that the wider basis of the double standard would offer such a wide monetary use for whichever of the two metals was in less demand at the time on the open market, that any considerable fluctuations in the relative value of gold and silver could be avoided.

This programme of an international double standard is known as *bimetallism*. Bimetallism is an attempt to solve the problem of a

single standard on the basis of two standard metals. The possibility of such a solution is for the most part a political question which cannot be discussed here. There is no doubt that a considerable stabilisation of the relative values of gold and silver could be attained, if the whole world could agree upon a bimetallic system. Whether this stabilisation would be sufficient to maintain the two metals constantly in circulation together is an open question. It must, therefore, remain uncertain to what extent bimetallism can be regarded as a practical and satisfactory solution of the problem of the single standard.

It is certain, however, that bimetallism, under the pressure of accidental circumstances, has introduced into the problem of the standard an element which is, strictly speaking, foreign to it. Our general treatment of the pricing problem has shown that prices are determined but for a multiplicative factor. It follows from this that a *single price* may be determined in any way. A *new* condition *must* enter before the problem of the determination of prices is finally settled. The condition, which means the fixing of the price-scale, may take different forms, one of which is the settling of the price of one particular commodity. This method is followed by the gold standard, and also by the silver standard. The double standard, however, results in the attempt to fix *two sets of prices*, that is, first the absolute price of a commodity, and then the price relationship between two different commodities. The task of fixing the relative prices of two commodities clearly lies outside the sphere of the monetary system, and must, when coupled with the problem of a standard, greatly complicate that problem and obscure its essential features.

With the introduction of the gold standard the development of the monetary system is completed, in so far as we have arrived at a solution of the currency question which has completely removed the disadvantage at first involved in the use of coined, instead of uncoined, metal, and also the disadvantage of a fluctuating relationship between the two precious metals. We have succeeded in obtaining an "invariability of money" as well as a "unity of standard." There still remains to examine, however, whether the

binding of the price-scale to the metal, gold, will guarantee a sufficient stability in the settlement of prices. It is conceivable that gold, apart from the formal fixing of its price under a gold standard, is subject to important fluctuations in value in relation to other commodities, and this would naturally lead, under a gold standard, to corresponding changes in the level of commodity prices.

This problem cannot be fully stated here, but it will be made the subject of a thorough examination in Chapter XI. As has already been mentioned, the scarcity of gold at the end of the nineteenth century brought about a fall in the general level of prices under a gold standard. Bimetallism wished to combat this fall in prices by abolishing the gold standard and creating a standard which should be plentifully supplied with the means of payment. At the beginning of the twentieth century the greatly increased output of gold caused prices under the gold standard to rise once more. In this way, the need which bimetallism wanted to satisfy was satisfied, at least for the time being. The supply of gold was sufficient to allow the world to maintain a gold standard and a gold coinage, without in itself exerting a pressure on the price-level. If, in the future, this should no longer be the case, or if, on the other hand, too much gold should come on the market, we shall be faced with a problem of monetary policy which will be of a much more general and fundamental importance than can be solved by merely reverting to bimetallic ideas.

#### § 42 *Free Standards*

The metallic standard, which fixes the price-scale by fixing the price of a metal, is not the only solution of the problem of the stabilisation of the price-scale. Experience has already shown, by a number of instances, that a certain stabilisation of the price-level can be attained without binding it to a metal or, indeed, to any commodity.

The fixing of the price-scale is accomplished, as we have seen, always by designating some medium of payment as unlimited legal tender in the scale. A necessary condition for the stability of the price-level is clearly a specific quantitative limitation of this

medium of payment. If the means of payment could be procured in any desired amounts without difficulty, then any price might be offered, and the stability of the price-level would cease.

If the means of payment is a freely mintable coin, its scarcity is guaranteed by the scarcity of the coinage-metal. As the latter has other uses also, the scarcity of the medium of payment is, it is true, secondary, but is at all events determined by objective conditions.

When the State reserves to itself exclusively the production of the coinage, it can restrict this coinage to whatever amount it wishes and so regulate the price-level. The requisite stabilisation of the price-scale will be attained in this instance by a direct quantitative limitation of the means of payment. A standard that rests upon this basis and, therefore, is not bound to a metal, is called a *free standard*.

Holland, until 1873, had a silver standard (guilder standard), but in that year, on account of the threatened depreciation in the price of silver, it suspended free coinage. The former metallic base of the currency was thereby done away with, inasmuch as the currency value of the coin could exceed its metal value. The scarcity of the means of payment, which up till then had been regulated by the scarcity of silver, now became more accentuated because of the progressive development of Dutch industry and commerce; and the value of the guilder not only rose above its falling silver metal content, but also rose above its former gold parity. During the early 'seventies, until the beginning of 1875, the London price of silver fell from approximately 60½*d.* to about 57½*d.* per ounce, whilst the London rate of exchange fell from 12 guilder to 11.6 guilder to the pound sterling. Thus the value of the Dutch guilder had risen considerably above its silver content.<sup>1</sup>

If, on the contrary, the need for means of payment in Holland had diminished, the value of the guilder could not have fallen below the value of its silver content, as the guilder could always be treated as metal. The former connection of the guilder with the metal, silver, still set a lower limit for the movements in value of the guilder. In practice, this limit never came into effect. The

<sup>1</sup> Helfferich, *op. cit.*, p. 80.

Dutch coinage had its value determined, in the period under review, exclusively by the scarcity of the guilder as a means of payment in the Dutch national economy; and so the Dutch monetary system was actually on a free standard. This standard fixed its price-scale by an authoritatively determined scarcity of the valid means of payment in it. By calling it a free standard, that does not imply that the value of the standard unit was less definitely fixed than would be the case under a standard based on metal.

A freely minted gold coin, the ten-guilder piece, having full legal tender at its nominal value, was introduced in 1875. As, however, the Government was not obliged to convert silver guilder into gold guilder, there was always the possibility that the Dutch standard currency unit would fall in value below that of the gold guilder. Actually this never happened. The silver coins were sufficiently scarce to maintain the standard currency unit at a parity with the gold guilder, and thus the Dutch monetary system got into a condition that was much akin to a gold standard.

India, after it suspended the free coinage of silver in 1893, was also for a time on a free standard. The value of the rupee rose above its silver value and was exclusively determined by the scarcity of Indian means of payment. At the same time the Indian mints were directed to exchange on demand English sovereigns against rupees, at the rate of 1 sovereign = 15 rupees. In other words, rupees were to be sold at 16*d.* each. Thus an upper limit was set to the value of the Indian currency unit. These regulations, however, had at first no practical significance, as the rupee rate of exchange remained in the years following a good deal under the rate of 16*d.* The rupee currency was therefore on a free standard, with a limitation of the fluctuations in value of the currency unit in the two directions. The lower limit of the value of the rupee was the value of its silver content, while the upper limit was the gold value of 16*d.*

Moreover, there are standards which have no connection whatever with a metal. These are the *paper standards*. A paper standard generally originates when bank-notes, which are no longer convertible into metal money, are declared to be legal tender, and become

*"forced currency."* If paper money is issued in sufficient quantities, then, since it has no intrinsic value, it must necessarily drive out all metal money. The value of the unit of account will then depend entirely on the scarcity of the paper means of payment.

A paper standard, without any connection with metallic means of payment, may be regarded as being theoretically the simplest standard of all. The various standards are differentiated according to the manner in which the scarcity of the means of payment is regulated. Under a pure paper standard the scarcity of the means of payment is determined by two factors – on the one hand, by the quantity of the paper money, and on the other hand, by the need for means of payment within the economic system in question. Under a metallic standard the regulation of the scarcity is much more complicated. In this latter case, the available amount of the means of payment is no given quantity in the problem, but, through the right of free minting, depends on the world supply of the mint metal, which in turn bears a certain relation to the cost of producing the metal. Under the head of demand one must not only reckon the monetary demand of the economic system concerned, but also that of the remaining economic systems, and, still further, the total world industrial demand for the metal.

For the clarification of the connection existing between the value of the standard currency unit and the scarcity of the means of payment, the existence of a pure paper standard is a phenomenon of the greatest interest.

If paper money is issued in unlimited quantities, the unit of account will depreciate to an unlimited extent, and prices will rise without limit. The paper economy is then bound to end in a catastrophe. We have an older example in the case of the issue of notes by Law's notorious bank in France, which issued notes to the stupendous amount of roughly three thousand million livres, but failed in the great crash of 1720. There was also the even greater, and just as fatal, issue of assignats during the French Revolution.

In recent times, there has often been a paper standard with a definite limitation of the paper money. The paper money has then

maintained a definite value, though it has undergone some fluctuations as compared with metallic standards. The object in view in regulating the paper money was generally the resumption of cash payments at a definite rate – that is, the eventual return to a metallic standard based on the original metal or a transference to a new metallic standard (gold instead of silver). In the meantime, however, the paper standard was essentially determined by the scarcity of the circulating paper means of payment in relation to the demand for them, although the expectation of an imminent change to a metal standard may have influenced the value of the paper currency to a certain extent.

During the period of the Napoleonic Wars, the Bank of England could not redeem its notes in gold as from 1797. As the notes were forced currency, and were thus legal tender, they displaced gold money. England, therefore, was on a paper standard, in which the unit of account, the pound sterling, had an independent value, determined only by the amount of currency in circulation – that is, bank-notes. Gold became a commodity, with a price, like that of other commodities, reckoned in pounds sterling. In this case, the independent existence of the price-scale is clearly seen. After the end of the war the pound sterling was gradually, by strict limitation of the note issue, brought to parity with the sovereign, and so finally the gold standard was restored.

In recent times, there have been numerous instances of deliberately regulated paper standards. The history of the Austrian paper currency system since 1848 is perhaps the most interesting for throwing light on the problems of monetary systems. During the 'fifties and 'sixties, Austria made fruitless attempts to return to the original silver standard. While it was not possible for the Austrian Government to raise their paper money to parity with the silver currency, this parity was finally reached automatically by the fall in the price of that metal. By the beginning of 1879 the premium on silver had disappeared. As, however, the depreciation of silver threatened to continue still further, and as, thanks to the right of free coinage, silver would have forced its way into the Austrian circulation (thus dragging the unit of account down with it), the

Government, wishing to change to a gold standard, decided in 1879 to suspend the free coinage of silver. Previous to this year the silver value of the silver guilder set an upper limit to the movements in value of the Austrian unit of account. After the suspension of the free coinage of silver, this limit was no longer valid. Austria had a pure paper currency without any connection with the precious metals. Actually, the Austrian guilder in the ensuing period of the sharp depreciation of silver maintained its value increasingly over the silver value of the silver guilder.<sup>1</sup>

All earlier experiences of paper currencies have been eclipsed completely by the train of events which, after 1914, turned all the currencies of the world into paper currencies, some of which suffered a fantastic depreciation. The belligerent countries issued notes, printed both by the State and the banks, in order to meet their obligations, while the neutral countries followed suit, partly on account of their own State expenses arising out of the war, and partly because they were more or less forced to grant credits to the belligerents. Attempts were made everywhere to veil the true significance of these proceedings, and to justify them on the grounds that the new means of payment were required solely in order to cover the growing needs of trade. The Governments, however, as we shall see in greater detail later, constantly created new purchasing power for themselves, either in the form of bank credits or by directly printing paper currency. By their action, they caused prices to soar, and the value of the currency unit to fall correspondingly.

The enormous increase in the world supply of the means of payment had an effect even on the value of gold itself, which, in 1920, fell to as much as 40 per cent. below its pre-war value. Later, the value of gold was stabilised for some years at a level corresponding to approximately 67 per cent. of its pre-war value. It was, therefore, not necessary for the purpose of restoring the gold standard that the value of the paper currency should be raised to the former gold value; it was sufficient if roughly 67 per cent. of its former value could be attained. This greatly facilitated the restoration of the gold standard at its old parity, and a number of countries

<sup>1</sup> Helfferich, *op. cit.*, p. 82.



— first the United States, and, in Europe, Sweden, followed by England, Holland, and Switzerland — were thus successful in returning to their former gold standard. In certain other countries, especially those where the currency depreciation had been the greatest, stabilisation of the monetary system was reached by means of a financial administration based on the creation of new media of payment, with strict limitation of their quantity, so making it possible to give the currency a new parity with gold. In Germany, where the old mark depreciated to a billionth part of its former value, as a result of the issue of paper currency, the currency was stabilised at this level, and, in so doing, a new unit of account, the Reichsmark, equivalent to the former gold mark, was introduced. In many countries, however, the stabilisation problem remained unsolved for a long time. People dreamed of restoring the old gold parity, but with justice hesitated to undertake the necessary, and often very considerable, restriction of the supply of the means of payment, from which would ensue a fall in the price-level. In the end, people had to be content with a stabilisation which placed the gold parity in the neighbourhood of the actual gold value of the currency in question. The experience gained during this period has demonstrated the absolute and decisive influence which the quantitative factor of the supply of the means of payment has on the value of the currency unit.<sup>1</sup>

<sup>1</sup> For a detailed discussion of these revolutions in the world's monetary systems, the reader is referred to my specialised works, viz.: *The World's Monetary Problems* (two memoranda, London, 1921); *Money and Foreign Exchanges after 1914* (London and New York, 1922); *Das Stabilisierungsproblem* (Leipzig, 1926); *Post-war Monetary Stabilisation* (New York, 1928); regular articles in the *Quarterly Report of the Skandinaviska Kreditaktiebolaget* (Stockholm), from 1920 onwards.

## CHAPTER X

### BANK MONEY

#### § 43 *The Concentration of Cash Balances in Banks*

MONEY is accepted as a general means of exchange in order to carry out a further exchange. This second exchange transaction may take place a greater or less period of time afterwards. It is not possible to say definitely in advance when the money will be used again as a means of payment. In the meantime, the supply of money forms the *ready cash* of the individual household. In general, every household that is not very poor has at all times a larger or smaller fund of ready cash. The sum total of all the cash reserves in a national economy, at a given moment of time, represents the *demand for money* of the country at that moment. The amount of money demanded depends on the habits of the people, and also on the organisation of the monetary system.

In primitive economies, the money is stored until it has been decided how to use it, either as such or as metal in the form of ornaments. If the money is not required at all for current consumption, this storing of it assumes the character of a treasure hoard. Such hoarded means may, in cases of emergency – such as a bad harvest, as happens periodically in India – be applied for purposes of consumption, or be used for any other special object; Lord Cromer's story of the Egyptian who bought an estate for £25,000 and half an hour later appeared with a string of asses carrying the money, which he had unearthed from his garden, illustrates this aptly.<sup>1</sup>

Under modern conditions, ample opportunities for making safe and profitable capital investments are afforded, even to people who are not themselves entrepreneurs, and the possibility is maintained of

<sup>1</sup> *Annual Report of the Director of the Mint*, 1911 (Washington, 1912), p. 55.

re-converting the capital into money whenever unforeseen circumstances make it essential. This has led everyone who has no special use for his money in the near future to invest it. By this means, the community's demand for money is clearly reduced considerably. Cash balances now consist mainly of those means which are destined to be used in the immediate future for payments, either for capital investments or for consumption by the individual or in the current management of a business.

The course of development, however, shows a progressive diminution even of this demand for money in proportion to the total volume of payments. The endeavour to find profitable employment for the cash funds, which after all represent capital, makes itself increasingly felt, and is reflected in the reduction of the individual's need of cash and in the diminution of the demand for money by the community as a whole. Four stages may be distinguished in this development.

The *first stage* is the concentration of the cash funds of several separate households in a bank. The individual entrusts his cash balances to the bank and withdraws money when he needs it. This concentration of cash balances represents already an important saving of ready money, for, although by the nature of the transaction the balances are repayable on demand, the bank does not need to keep a cash reserve as large as the sum total of private balances entrusted to it. The individual depositors will not all demand the return of their money at the same time. One individual has a payment to make to-day, another has one due to-morrow. It will be some time before a sum equal to that of the balances is paid back, and in the interim, under normal conditions, the bank will have received fresh cash. If there is a large number of depositors, the payments and withdrawals every day will be approximately equal. The bank then will need its cash reserve only in case of any excess withdrawals. The more the payments and withdrawals balance, the smaller will be the average level of the bank's cash reserve in comparison with the deposits of the public. Nevertheless, the bank must always be prepared to meet demands for repayment which may be greater than usual, and hence, usually, its reserve must never fall

below a certain level. If it is possible for the bank to keep a cash reserve smaller than the total of the balances deposited with it, then the bank can use a portion of the deposits, and invest them in interest-paying enterprises. The bank will be able to make a profit out of the transaction, and will endeavour to attract as much cash as possible. To this end it may possibly pay interest on deposits, though, naturally, at a relatively low rate. The convenience and security of keeping balances at a bank are often a sufficient inducement to attract deposits. Thus the concentration of individual balances in the banks is in the interest both of the banks and of the public.

As a result of this development the money stock of the national economy is divided into two parts, one of which lies in the banks as a *reserve*, and the other remains in the hands of the public, and is known as the *circulating* volume of money. When the habit of depositing funds with the banks has become widespread, the community will be satisfied with a relatively small quantity of circulating cash, but, in addition, the bank reserve will have to be kept at a certain level. This reserve will be drawn upon as soon as the total demand for circulating money happens to rise above its normal volume. On each of these occasions money will flow out of the reserves into circulation, only to return to the reserves when the demand subsides. The size of the cash balances which must normally be held as reserves will be accordingly determined by the extent of the fluctuations in the community's demand for circulating money.

Nevertheless, as a result of this concentration of cash balances, a considerable reduction in the community's demand for money must on the whole be attained. Looking at it from another standpoint, an increased volume of payments will be effected by means of a given quantity of money. In other words, the concentration of cash balances diminishes the scarcity of money.

We have taken bank deposits into account here only in so far as they represent cash balances repayable on demand. As has been shown, these deposits are received by the banks, partly from business concerns requiring a cash fund for current purposes, which, however, prefer to keep a portion of this fund in a bank, and partly

from private persons who have means at their disposal for a short time either for consumption or investment purposes.

The banks also receive deposits of a quite different nature. Sometimes, a man who has saved money entrusts the investment of it to his bank. He lends his savings for a long period to the bank against payment of interest. The bank has then to find an investment for this capital. The finding of suitable investments for the capital of the public is a specialised business, which is undertaken partly by the banks and partly by special institutions set up for that purpose. For small savings, the savings banks are specially indicated. Naturally, besides these main types of deposits, there are also intermediate forms; in these cases, the balances are repayable at short notice and are allowed only a low rate of interest. It is not clear whether they are to be regarded as temporary investment or as so much cash. In a study of the nature of money we must clearly leave out all deposits which represent capital investments, and confine ourselves to pure cash balances, entrusted to the banks on current account.

The second and third stages in the rational utilisation of these balances are reached when cheques are introduced. The bank will then be able to authorise a depositor to use his balance by means of a *cheque*, that is, an order on the bank, payable at sight. In what follows, such balances, which may be drawn upon by cheque, we will for brevity call "deposits." A payment by means of a cheque transfers to the payee a sight claim on a bank for money. The payee may pass on the cheque to some other person, instead of paying it into a bank, but this use of cheques is not the customary procedure. Here we assume, as is generally the case, that the cheque is used only for a single payment between members of the public.

This payment, however, may be effected in several ways. If the cheque is presented for payment by the payee himself, then, in respect to the payment itself, no essential advance has been made upon the first stage. Payment by cheque is, in this case, no substitute for a money payment. But even then the possibility of being able to pay at any moment by means of a cheque enables the usual cash balance of the depositor to be considerably reduced. When the

receiver himself has an account, he may simply let the cheque be placed to his credit. In this connection two cases must be distinguished. The holder of the cheque either has his account at the same bank as the drawer or at another bank. In the first case, there is clearly involved only a transfer in the books of the bank. The payment is effected without the use of cash. This process of transfer, which, if the bank has a network of branches, can be used for payments between different places, and thus greatly facilitates the settlement of accounts, is the *second stage* in the development of the holding of cash balances.

In the second case, however, the bank of the holder of the cheque would have to cash it at the bank of the drawer, and so the payment would have to be effected by using money. This is avoided by the system of compensation between the banks, which is known as the *clearing system*; and this is to be regarded as the *third stage* in the development of the holding of cash balances.

The introduction of cheques, coupled with the development of the clearing system, has enabled the banks to meet the demands of their depositors, mostly without having to pay out cash. Every bank, however, must keep a cash reserve in order to satisfy the demands of its customers for ready money, and also in order to meet any unfavourable balance at the clearing house. These funds must bear a definite relation to the total amount of its deposits.

The *fourth stage* is the concentration of the cash balances of the banks in a central bank. Of course, the banks retain an amount sufficient for their daily needs. Additional cash, needed to serve as a reserve fund for greater security, is deposited with the central bank as a "clearing reserve."

For the clearing system, this means that any differences may be met by transfer from one clearing reserve to another. The stage is then reached when cheque payments between the holders of bank deposits are effected without resorting at all to ready money, and thus no cash reserves need be held for that purpose.

Nevertheless, in order to be able to meet their deposit liabilities at all times in cash, the banks must hold certain reserves in cash. The concentration of part of these cash reserves in a central bank

has the same effect as the corresponding concentration of the cash of individuals in the ordinary banks – that is, a saving in the total demand for cash. Probably this saving is relatively smaller, as the cash requirements of the different banks are generally subject to the same influences, both seasonal and cyclical. The demands of the banks for money occur mainly at the same period of time, and the central bank has to meet these demands in full. The periodic compensation of the demands for money of a number of banks will rarely be so complete as the corresponding compensation of the demands for money of a much larger number of bank customers of the most diverse occupations and in the most varied economic circumstances. The central bank is therefore obliged to keep a relatively greater cash reserve against its deposits which can be drawn on by cheque, and it can invest only a relatively small proportion of the funds deposited with it in remunerative transactions. Naturally, the clearing reserves at the central bank do not bear interest.

The process described above is of prime importance with regard to economy in means of payment. As credit balances may be disposed of by means of cheques, and as, therefore, payments may be effected without resorting to cash, the deposits assume the character of independent media of payment, being substitutes for money. The deposits have this character only in so far as they exceed the cash reserve held against them, for the remainder of the deposits merely represent the cash held as reserve. The main point, however, is that, through the use of cheques, certain demands for money payable at sight are used as media of payment, side by side with money, and compete with money, thus reducing the scarcity of the means of payment.

Up to the present, we have so represented matters as if deposits always arose through the public's entrusting its surplus funds of cash to the banks. This, however, is only one side of the process. In practice, deposits are also created and constantly fed by the bank's granting advances to its customers, either by discounting bills or by making loans and then crediting the clients with the amount in their accounts. The difference between these two

methods of creating deposits is by no means as great as people seem to imagine, in the lively discussions on the subject. In the first case, the cash flowing into the banks is lent out again, the banks thereby granting new advances. The final result in both cases is that new advances are granted to the public so that its balances, against which cheques may be drawn, rise correspondingly, whilst the supply of circulating money remains unchanged. The crux of the proceeding is, therefore, an increase of deposits whilst the public's supply of cash remains unchanged, and this results in an increase in the total supply of the means of payment. However, as we shall see presently, such an increase in the supply of the means of payment is generally not possible without a corresponding increase in the demand for circulating money. It is the difficulty of satisfying such demands that limits the apparently unrestricted power of the banks to create deposits.

In practice, cash constantly flows into the accounts of depositors, since every business pays all surplus cash into its banking account. On the other hand, cash is always drawn out in such amounts as will meet the needs of trade for such means of payment. Thus constant equilibrium is maintained in supplying a country with the media of payment of the two different kinds. As a result of drawing cheques, deposits are transferred in large quantities to other banks. This may force single banks to place restrictions on their creation of new deposits; but these transfers have no effect on the total sum of deposits, nor on the supply of the means of payment of a country.

Deposits can never completely replace actual cash as means of payment. Even when the use of deposits is highly developed, actual cash is used on a large scale in certain spheres and for certain kinds of payment. The whole of the working-class, the majority of artisans, and also small traders and the large majority of farmers, are as a rule entirely outside the cheque-using public. But the holders of accounts which can be drawn on by cheque also require ready cash to a great extent for their daily personal expenses (in restaurants, theatres, trains, taxi-cabs, etc.).

The quantitative relation existing between deposits and money in a nation's supply of means of payment varies considerably from



country to country, and even in any one country is subject in the long run to variations, generally in the direction of extending the use of deposits as media of payment. At any given moment, however, this relation is determined by the habits of the people, and is therefore to be regarded as a fixed quantity. The public will deposit on cheque-account a sum which bears a definite relation to the actually circulating quantity of money, neither more nor less. If, therefore, the banks, through their advances, create a surplus of deposits, they will at once be faced with demands for payment in cash. The ratio of deposits to money is, of course, not absolutely fixed. In certain circumstances the demand for means of payment applies specially to deposits, but in other circumstances the demand applies to money; but even these variations relate to independent causes, which, in the main, are outside the sphere of influence of the banks.

#### § 44 *The Limitation of Deposits*

Deposits against which cheques may be drawn are, as we saw, a special medium of payment competing with money. At first sight, it would appear that banks are able to increase these deposits as much as they please. The bank's customers, who wish to extend their businesses and therefore require further means of payment, receive these means in the form of deposits either by discounting their claims on others, or by obtaining advances against securities, or simply on the security of their reputation. As long as the banks grant new loans, new deposits can be created. Such an unlimited creation of means of payment which are used to a great extent in the modern economy, and which are ranked equal to money, must be regarded as impossible. If the price-scale is to have any stability at all, there must be a definite scarcity of the total supply of means of payment, and, hence, of each particular medium of payment. Actually, as has already been emphasised, a medium of payment attains its proper character only by virtue of the way in which its relative scarcity is determined. This applies also to deposits.

The scarcity of this medium of payment is determined by the liability to pay out deposits in cash on demand. In dealing with this question it is better, at first, to leave out those claims to money

which are destined for payments abroad, since international payments are best dealt with as a separate subject (Chapter XII.). We shall, therefore, not deal with foreign payments, and shall confine our considerations to "the closed economy."

We have seen that, at every stage in economic development, the total needs of trade for means of payment are divided in a definite ratio between money and deposits. With a plentiful supply of means of payment the demand of trade for circulating money increases, and this increased demand turns to the cash funds held by the banks. It follows that banks cannot supply means of payment to traders in unlimited quantities without being faced with demands for ready cash.

As long as these demands are confined within narrow limits, they can be satisfied with the aid of the cash reserves of the banks, but if the demand for money continues to increase it is clear that this will become impossible. The banks are therefore compelled to impose special restrictions upon their activities in connection with supplying trade with means of payment. On the whole, these limitations must be of such a nature that the reserves are drawn on only occasionally; over a long period of time they must remain largely intact. This results in a certain scarcity of deposits and in a definite limitation of the supply of means of payment.

As a result of the general restriction of the supply of means of payment, the demands of trade for cash are perhaps not entirely prevented, but, still, they are limited to such an extent that they can be satisfied with the help of the cash reserves of the banks. The purpose of the total cash reserves of the banks is, therefore, to satisfy those demands for money which arise even though the terms on which the banks grant loans result in correctly limiting the total supply of means of payment. The level of the cash reserves must be determined with this end in view.

It must be noticed that the community's demand for money is by no means constant, but undergoes considerable variations from causes which are beyond the control of the banks. In the first place, the demand for means of payment rises above its normal level at certain seasons of the year. For instance, on every quarter

day large sums of money become due. Rents, salaries, interest of all kinds, are then paid on a large scale. Means with which to make these payments must be held ready for some days previously, and it is not until some days after the quarter day that the demand for money sinks to its normal level. In autumn, large sums of money are necessary to pay for the harvest, and similarly for purchases made at Christmas, and for the especially lively tourist traffic which occurs at certain seasons. In the second place, the demand for money is influenced by the state of trade at the time. If boom conditions prevail, an increase in the turnover of the whole economy occurs, and consequently the demand for money is often considerably enhanced. Such a rise also takes place in periods of crisis. As a result of the cessation of buying, anticipated sources of income do not materialise, or, at least, not at the expected time, whilst, on the other hand, means of payment must be held ready in case of unforeseen expenses, such as honouring protested bills.

Under such conditions, everyone will seek to strengthen his cash reserve as much as possible. Thus there arises in times of crisis an abnormal demand for means of payment, which may rise to dizzy heights if it is feared that the banks will soon refuse to grant further advances.

In all such fluctuations in the demand for means of payment, it is a great advantage that deposits can be easily increased by further loans and thus represent a very elastic media of payment. It is neither feasible nor desirable to regulate the supply of means of payment (by varying the terms of bank advances) so strictly that no play is left for independent variations in the demand for money. But, if an increase in deposits takes place, there generally follows a corresponding, though perhaps not strictly proportional, rise in the demand for circulating money. The reserves of the banks must then supply the means necessary to satisfy this demand.

There must, therefore, be present in the national economy a reservoir of cash, out of which trade can draw enough to cover its occasional extra demand for circulating money, and into which money will flow when the demand falls. This purpose is served by the total bank reserves. With this end in view, a minimum level

is required in normal conditions for the reserve, determined by the amount by which the maximum demand for cash exceeds the normal demand. This difference is naturally dependent on the regulation of the total supply of means of payment on the part of the banks and, by a suitable strictness in these regulations, may be reduced to a certain minimum.

Naturally the margin within which the amount of circulating money varies widens in direct proportion to this actual quantity of money, and the normal reserve must therefore be regarded as a definite quota of the quantity of money in circulation. As, however, at a given time, this quantity of money bears a definite relation to the total deposits, the normal reserve which is held to cover cash withdrawals of deposits may also be expressed as a ratio of the total deposits. It must be noticed that this ratio becomes progressively smaller the more deposits are used as media of payment in preference to money. In this way, a community in which the use of deposits is highly developed, and in which the actual cash circulation is relatively small, is able to carry on with a relatively small cash backing for deposits, as is shown by English experience.

The means by which the banks succeed in protecting their reserves, and thereby attain a certain scarcity in the supply of the means of payment, are found, as we have seen, in a limitation of the advances, by means of which new deposits are created. Nowadays, however, no large bank – least of all a central bank – will grant advances up to a certain limit and then suddenly refuse its customers any further accommodation. The limitation which may become necessary is enforced rather by means of a suitable tightening-up of the terms for discounts, loans, etc.

Hence the real regulation of the creation of new media of payment in the form of deposits is to be found, not in a rigid restriction of the total amount of advances, but by controlling the conditions on which the banks grant advances. What exactly are the effects of these conditions we shall see later (§§ 46–8). Here it is sufficient to recognise the *fact* that the loan conditions of the banks are the means by which the necessary limitation of the

deposits, and thus of the total supply of means of payment, is effected.

The mechanism by which the community's supply of means of payment is regulated is as follows. By means of the conditions on which they will grant loans, the banks largely regulate the total demand for the means of payment, although there remains a margin for independent fluctuations of this demand. The demand for means of payment is distributed in a certain ratio (subject to slight variations) between money and deposits. Thus the quantity of circulating money, as well as that of deposits, is, subject to slight variations, determined by the conditions on which loans are granted. The demand for money which is still possible is met by the money stocks of the banks. The loan terms must be so framed that the reserves are always able to fulfil this function. To this end, the regulation of the supply of deposits to the business community must broadly be made so that business on the whole does not demand repayment of the deposits in cash. Only then will the maintenance of cash payments over a long period of time be made possible.

Thus, through the terms on which they will grant loans, banks are able to impose a certain limitation of deposits which, at first sight, seem to be a medium of payment which can be increased indefinitely, and by this means the banks can maintain the deposits at a certain approximate parity of value with actual money. If this restriction is sufficiently severe, and if, in addition, a sufficient supply of ready cash is kept, it is always possible to satisfy the demands of trade for cash, and thereby to bring about the absolute parity between deposits and money.

In the modern economy, as we have seen, the power of correctly limiting deposits, and thereby of regulating the total supply of the means of payment, is placed in the hands of the directors of the banks. The guarantee that the banks will carry out this task properly is to be found in the fact that it is only in this way that they will be able to fulfil their obligation to redeem the deposits in cash on demand.

One might expect that a function which is of such importance to the community at large would be subject to State supervision.

Against such a legal regulation of reserves which would fix a minimum ratio of reserves to deposits is the fact that these reserves would be immobilised also in the case of an abnormal need and, therefore, their main purpose defeated. In most countries, the State has refrained from imposing such restrictions. The influence in the opposite direction, which originates in the United States and which, in recent years, has grown in strength, hardly appears favourable to a rational regulation of the supply of means of payment.

#### § 45 *Bank-notes*

The bank-note is an order for a round sum drawn on a bank, and payable at any time to the bearer. Bank-notes, in so far as they are sight demands for money, are ranked equal to deposits. This comparison is made particularly clear in those cases where the bank-note originally arose from an acknowledgment by a bank of a sum of money deposited with it. Both notes and deposits serve as media of payment, but fulfil this function in somewhat different ways. When payment is made by a bank-note, a money claim on a bank is directly transferred to the payee, whilst the corresponding transfer of a deposit balance postulates the drawing of a cheque. In reality, the process is the same in both cases. The bank-note, however, which itself is the certificate of a money claim, is a means of payment much nearer to actual money than are deposits. A bank-note, like a coin, can effect any number of payments one after the other, whilst payments through the transfer of deposit balances require a new cheque to be drawn each time.

Further, it must be noticed that bank-notes, especially when they have been issued by a large central bank, possess a greater and a more generally recognised security than a cheque. For the security of a cheque depends not only on the bank on which it is drawn, but also necessarily on the drawer. Only he who knows the drawer personally will take the cheque in payment, whilst everyone who has confidence in the bank will accept a bank-note. In the physical sense, the bank-note can circulate quite in the same way as a coin. In this respect, the cheque is inferior to the bank-note.

Further, bank-notes resemble coins, in that they represent round sums, and, therefore, as soon as available in suitable denominations, can be used with advantage for payments of any amount. These two properties – a generally recognised value, and a round sum value – as we know, are those which distinguish minted coins from the raw metal as means of payment, and make them money. These self-same properties enable the bank-note to take over the special money functions of cash.

If the bank-note is issued by a respectable bank, it is willingly accepted by everyone in payment, and thus serves equally with money as a general means of exchange and medium of payment. It is a universally recognised rule of law that a debt is regarded as paid when once payment has taken place in bank-notes. Notes of the central bank are generally even declared legal tender. The bank-note thereby approaches so closely to the conception of money that the general public regard it as such. Only the circumstance that the bank-note is only the certificate of a claim to money prevents us from recognising the bank-note as money. The moment that the obligation of banks to convert their notes into money is suspended, bank notes are transformed into actual money. The country has then a system of paper money, and the inconvertible notes which are now legal tender in this system have a “forced currency.” Such bank-notes no longer represent claims to money, but are actual money. It must be noticed however, that as long as there is a prospect of a resumption of cash payments, the notes retain a certain latent character as claims to money.

The circumstance that convertible bank-notes are simply claims to money, and not actual money, has not diminished the practical utility of the legal tender notes of central banks as circulating media of payment. Experience shows that, on account of their convenience, notes are actually preferred by the public, and therefore drive out hard cash as a means of payment. If such a displacement were regarded as undesirable, steps would be taken to set a lower limit to the face value of the notes. Thus, before the war, the Bank of England was not allowed to issue notes of a denomination of less than five pounds, and so gold coins were kept in general circulation.

The German Reichsbank, which formerly was not allowed to issue notes of smaller denomination than one hundred marks, received in 1906 the right to issue notes of fifty and twenty marks, so that the bank was enabled to attract to itself a quantity of gold corresponding to the amount of the note issue, or at least to satisfy in part a rising demand for circulating money by means of these notes. In Sweden, where the Riksbank's notes are issued in denominations down to five kronor (a little more than five shillings), no gold whatever circulates, and the whole stock of gold is concentrated in the Riksbank.

Bank-notes, therefore, fulfil the need for cash balances just as well as actual cash. In this respect, the effect of bank-notes is somewhat different from that of deposits. Deposits replace to a certain extent the private holding of cash balances, whilst, in those private balances that are still necessary, bank-notes replace actual cash. The bank-note is thus suited to satisfy the demand for money which remains after the development of cheque transactions, at least in so far as payments of somewhat large amounts are concerned. How far bank-notes will displace actual cash depends, as we have seen, chiefly on the denominations in which they are issued. If notes are issued, in sufficient quantities, down to the denomination of the smallest gold coin, the whole current circulation may be replaced by notes, so that, finally, only token coins circulate alongside of the notes.

The power of replacement of money by bank-notes is specially significant when it is necessary to deal with fluctuations in the demand for actual cash. As has been mentioned in previous paragraphs, a rising demand for circulating money directs itself to the reserves of the banks, and ultimately to the central bank. This demand may be satisfied by an increased issue of notes, at least to the extent to which notes make up the regular circulation. Generally, when there is an increased demand for money, the relative share of notes in the total circulation rises, so that the abnormal demand may be satisfied to a still greater extent by means of notes. The right to issue notes replaces, to a greater or less extent, the reserve that the central bank must hold against its deposits.



To the extent that bank-notes displace money from the circulation, whether as a result of the issue of notes of smaller denominations or as a result of changes in the habits of the public, the note circulation can be increased without augmenting the total supply of means of payment. If, however, this displacement of money by notes comes to a stop, and money henceforth maintains, on the whole, a fixed relative share of the total circulation, every increase of the notes must produce a corresponding relative rise in the demands of home trade for cash. The effect of an increased note issue is then the same as that of a further creation of deposits.

Actually, notes and deposits together form a group of means of payment that we may suitably call "*bank money*," the common features being that they are created by the banks and supplied to the public, and that their requisite quantitative limitation is determined by the same factors. As we have seen in the case of deposits, this limitation is necessary because any excessive creation of bank money gives rise to demands for cash, which are directed against the reserves of the banks, and these demands can only be prevented in the long run by a suitable moderation in the creation of new bank money.

However, in a country where notes form a relatively large proportion of the total circulation, these demands are fairly small, and they practically disappear completely when notes have totally displaced full-bodied money from circulation. In the closed economy to which our study has hitherto been confined, an indefinite increase in bank money would certainly occasion an increased demand for small token coins, but would not be checked by the demand for standard money. Under a gold standard, however, there is always a demand for gold for non-monetary purposes, and, as a rule, this demand will increase in proportion to the increase in the supply of means of payment, and will be directed at the bank reserves, thus preventing an increase in bank money (see § 50).

The obligation to redeem notes in gold imposes on the banks under all circumstances the necessity for a certain moderation in the creation of bank money, and especially in the issue of notes. This necessity furnishes a guarantee to the community that there

will be a suitable restriction in the total supply of the means of payment. If banks were to satisfy demands for media of payment without limit, the total reserves would soon be exhausted, and convertibility could no longer be maintained.

As we have seen in the case of the limitation of deposits, the function of the reserve, given a sufficient restriction of the note issue, is to form a fund capable of satisfying the periodically recurring increase in the needs of trade for money. As far as home trade is concerned, the cash reserve of the central bank does not serve in the main, as is often supposed, for the conversion of the notes or of other daily liabilities, but, rather, it renders possible the extension of these liabilities and thereby the satisfaction of all the legitimate needs for payment of a business activity of a changing volume.

The means for retaining the note circulation, as well as deposits, within suitable limits are given by the conditions under which bank money is supplied to the public. As the banks can only supply their customers with bank money in general, and can exert no influence as to the type of means of payment which is demanded, clearly the conditions are the same for both types of means of payment; therefore, they will be treated together in what follows.

On account of the great importance that the note circulation has for all sections of the population, and in view of the resemblance of bank-notes to actual money, which constantly deceives the average politician, it is easy to understand why the legislature has deeply occupied itself with the regulation of the note issue, whilst, as we have already seen, there has generally been no corresponding regulation of deposits. It must be noticed that the legislature can regulate only the right to issue notes and not the actual note circulation, which will always have to be controlled by the bank itself, according to the economic situation at the moment. We shall now see that the legislature in these endeavours has been unsuccessful, as is often the case in the economic field, in trying to reach the direct realities of life.

In regulating the note issue, either a maximum limit was set to the note circulation, as was formerly the case in France, or, as in most other countries, a direct relationship was established between

the total note issue and the reserve. In the latter case, two chief methods have been employed.

The first method, which originated in the regulation of the note issue of the Bank of England, consists in setting a limit to that portion of the notes not covered by the reserve; that is, in the fixing of a certain maximum amount by which the note circulation may exceed the cash reserve. The principle underlying this is that there may be a certain minimum of notes in circulation, without any gold cover, because trade cannot dispense with them, and for the remaining notes there must be a reserve exactly corresponding to the sum needed for their redemption. If the note issue is regulated according to this method, new notes may be issued only to the extent to which the cash reserve increases. The elasticity which the note issue should give to the total supply of means of payment is therefore very limited, and is present only in so far as the right of note issue is not fully made use of. The great disadvantage of this method, that it does not provide the elasticity which is essential in times of crisis, has been overcome in England simply by suspending, when necessary, the relevant clauses of the Bank Act. The pre-war German banking law, which took over the English principle of a fiduciary issue, attained a more regular elasticity of the note circulation, in that, apart from the raising of the fiduciary limit at the quarter days, introduced in 1909, issues in excess of the fiduciary limit were sanctioned on payment of a tax in proportion to the excess note issue. This taxation, although it might have had a certain influence on private banks, probably had no influence on the note-issuing policy of the Reichsbank. Hence the fixing of a fiduciary limit hardly resulted in a real restriction of its notes by the Reichsbank.<sup>1</sup>

The second method of legally regulating the note issue in relation to the reserve consists in fixing a certain percentage cover. This method has also been incorporated in the German banking law – the note circulation must be covered to at least a third by the cash reserve. Such a cover was recognised for a long time by the

<sup>1</sup> Cf. the relevant passages in the memorial publication of the Reichsbank (*Die Reichsbank*, 1870–1900, p. 219), where it is said that “the Reichsbank in its discount policy has never let itself be mechanically influenced by the intentions of this system.”

private English note-issuing banks as a suitable average, and was endorsed by practical experience. The reserve so calculated is clearly there to be made use of in bad times, either for the conversion of notes or for increasing the note issue beyond that permitted by the normal cover requirements. If, however, the law fixes the cover requirements, then those requirements thereby cease to be a practical rule for the limitation of the note issue. Thus, if the State attempts to fix the normal relation between note issue and reserve, the bank will be prevented from disposing of these reserves, at the very time when they should be put to practical use. If, however, the law fixes a percentage cover which is lower than what may be regarded as normal, it clearly furnishes no guarantee of a sufficient cover in normal times and, perhaps, puts obstacles against a rational employment of the reserve in times of need. In any case, the rule of keeping a cover of one-third has never been, under normal conditions, the guiding principle of the Reichsbank in its note issue, as the bank before the war generally kept a cover in the neighbourhood of two-thirds.

Thus we see that the direct limitation of the note issue lies in no case in the legal prescriptions as to the size of the cash reserve. The banks will always strive after another, and better, reserve proportion, and thereby will take care to be able at all times to comply with the legal provisions, without letting themselves be exclusively guided by this consideration. But even in these endeavours of the banks there is no direct and effective means for regulating the note circulation. No central bank will issue notes up to a certain limit and then turn away any further demands. The real limitation of the note circulation always lies in the concrete conditions under which notes are supplied to trade in general.

In this respect, therefore, notes resemble deposits.

The one-sided interest of the legislature in the maintenance of the reserves gradually led to the reserves being regarded as the principal thing, while the convertibility of the notes which should be guaranteed by the reserves, and the limitation of the note issue which should render convertibility possible, have been accounted only of secondary importance. This view-point found its expression

in the idea that in all circumstances a minimum reserve had to be maintained, which could therefore never be made use of. In order to protect the reserves of the central banks, on the outbreak of the war, the obligation of conversion was actually suspended, or other measures having the same effect were introduced. By those means, however, the way was left clear for an unlimited increase in the note issue. In spite of the fact, therefore, that the holding of reserves had failed in its main object, people still sought to retain the reserves and to reinforce them as far as possible. Attempts were made to convert the public to the idea that the reserves still formed a certain "cover" for the notes, and gave them a security which they no longer possessed in a definite limitation of their quantity. In what follows, we shall see that the dishonesty of the official announcement, by which the public, with the aid of a distorted statement regarding prevailing conditions, was deceived, was fatal for the entire European monetary system.

#### § 46 *The Cover of Bank Money and its Reflux*

It is of primary importance, with regard to the conditions of the supply of means of payment by the banks, that bank-notes as well as deposits, when they are not simply exchanged against cash or money claims that have fallen due, should come into the possession of the public only in the shape of *advances* made by the banks. This fact is important in connection with the limitation of the supply of means of payment mainly from three different points of view. First, because a regular *reflux of bank money* is set up; secondly, because the *cover for the bank money* is determined through selection of the securities offered for the advances; and thirdly, because the *interest* charged on the advances limits the demand for them, and thereby indirectly limits also the supply of the means of payment. In this section we shall consider the first two of these factors.

When granting advances which serve for the creation of media of payment, emphasis must be laid on the speedy repayment of the advances. Such advances are not willingly made for periods longer than three months. Among central banks the average time in which the securities held have yet to run is kept very short. Such a

liquidity of the advances has the result that a large part of them must be repaid each day.

The liquidity is in itself important in so far as it enables the banks quickly to adapt their advances to alterations in the solvency of their customers, to changes in the conditions of the various branches of industry, and also to changes in the quality of the real security offered them. Thus bad investments may be got rid of as quickly as possible, and so the value of the bankers' portfolio is maintained at its highest practical level.

Moreover, a greater liquidity of the assets serves to maintain as great as possible the reflux rapidity of the bank money. The reflux rapidity is of great significance for a well-ordered supply of the means of payment of a community, and thereby also for the preservation of a stable monetary system. Here, two view-points must be considered.

In the first place, a sound supply of the means of payment requires that their amount shall be reduced automatically and as quickly as possible when a falling demand for money occurs. We know already that the demand of the modern community for means of payment is subject to important fluctuations, for example, according to the seasons. A fortuitous increase in the demand for money should be completely satisfied by the banks. As soon, however, as the demand falls off, the bank money so created must be withdrawn as quickly as is practicable. If this is not done, a condition must arise in which the quantity of the bank money outstanding exceeds the real demand for it. Such an unjustified extension of the money supply of the community has always a tendency to depreciate the value of the currency unit, and for this reason should be avoided as much as possible.

In the second place, the regulation of the supply of means of payment by the terms on which banks grant advances becomes effective to the extent that changes in these terms quickly obtain general applicability. If advances are granted only for thirty days, clearly it can take only thirty days before changes in the terms for the total quantity of advances are put into effect. If, instead of this, advances were granted for periods of three months, then the

corresponding interval would be three times as long, which would obviously greatly weaken the influence of the banks on the market.

The banks must be able at all times to control the supply of money to trade, and therefore must have adequate opportunity to exert as great an influence as possible on the community's supply of money, by restricting advances. This can occur only through a tightening-up of the terms on which new advances are granted. Such a restriction exerts a sufficiently powerful influence on the total monetary supply only if a relatively large share of the advances outstanding falls due for repayment each day.

The advances, by means of which new bank money is put into circulation, are granted as a rule only against security. These securities form the cover for the bank money. As the maintenance of the requisite liquidity of the claims held by the banks makes it necessary for advances to be granted only for short periods, temporary capital requirements alone can be met by bank advances, while the whole of the demand for permanent capital resources must be excluded. Within the banking profession itself, those concerned do not wish, as a rule, to tie up the resources of the bank for periods longer than three months. This restriction on the nature of the capital requirements which may be met by the creation of bank money results naturally in a certain limitation of the total supply of means of payment.

The securities which are used in such circumstances as cover for the bank money are principally composed of bills and securities serving as collateral for loans.

In its various forms, the *trade bill of exchange*, regarded from an economic point of view, is a promise by the purchaser of a commodity to pay a certain sum of money, the price of the commodity, after a definite period.

The goods are undoubtedly paid for provisionally by the bill. For the time being, therefore, the bill serves as a means of payment, and the possibility of being able to pay with bills temporarily increases the purchasing power of the buyer of the commodities. A promise to pay, however, is in itself no real substitute for a medium of payment. If the seller retains the bill until it falls due, and if the

bill is honoured, then the final settlement will take place after all in the usual media of payment. The bill of exchange only postpones this payment, and does not render it superfluous. The employment of bills in this case does not diminish the necessity for media of payment. The same is true when the seller of the commodities does not retain the bill himself, but sells it before maturity to his bank.

The bill may serve as a genuine means of payment when, after endorsement, it is handed on in settlement to other persons. In earlier times this use of the bill was general, and large quantities of bills were in circulation, bearing whole series of endorsements. Now, however, inland bills are mostly used only once in payment. If they are not retained by the receiver of the payment, they are sold as claims to money, but are generally not employed as media of payment. In the sphere of international payments, the bill is still widely used as a means of payment. We shall deal in a later chapter with the case of payments by means of foreign bills. At present, we are concerned with explaining theoretically the internal supply of the means of payment of a national economy, and shall ignore the employment of a bill as a means of payment; and assume that it serves as payment only on its creation.

What principally causes the bill to be less suitable as a means of payment is that it is payable not on sight, but only after a certain time. In this respect, the bill differs essentially from bank-notes and deposits, which while being equally claims to money, are due at all times. As a result of this disadvantage bills are exchanged against these particular means of payment or against money. This takes place when the bill is *discounted*, that is, when it is sold to a discounter, who charges the discount to compensate himself for the loss of interest suffered from the day of purchase till the day the bill falls due. The amount charged as discount corresponds to the difference in value between a sight claim and a claim to the same amount which falls due only after a certain time.

From an economic standpoint, the discounting of a bill amounts to a loan to the person who draws the bill. The discounter normally supplies the purchaser of a commodity with the capital resources which he requires for the period that he must keep the commodities



in his business. In a certain sense, the commodities can be regarded as real security for the bill. Normally, therefore, the sum total of bills in circulation is covered by a quantity of goods in various stages of production. However, there can be no talk of an exact correspondence between the time that a commodity remains in the process of production in the purchaser's business and the currency of the bill he has accepted. For instance, though the currency of the bill may be three months, the process of manufacture or of sale may take four months. Thus, clearly, the total value of commodities in the process of manufacture is greater than the value of bills then outstanding. This means that industry itself possesses part of the capital resources necessary for its circulating capital, and has only to procure part of it by discounting bills. But it may happen that the average currency of the bills of a concern is greater than the average period of production of that concern. If, for example, the currency of the bills is three months, but the commodities, which are sold for bills, are, on the average, produced and sold in a month and a half, the total of bills outstanding is obviously double that of the total market value of the commodities which have been bought by bills. In this case, industry has acquired capital resources through discounting, not only for its circulating capital, but also for a part of its fixed capital. It is, therefore, not quite accurate to maintain that the total bills in circulation are completely covered by circulating capital used in the process of production; but in normal conditions it is approximately true. There is no doubt, however, that the total circulating capital of a community is much greater than the total value of bills concurrently in circulation.

As bank money is covered by bills, which themselves are covered by circulating capital, the real cover of bank money consists of circulating capital. From this point of view, bank money is to be regarded as claims on the circulating capital of the community. This renders bank money especially suitable as a means of payment. For by far the greatest employment of the means of payment consists precisely in payments for circulating capital, advancing in the process of production towards the consumer. When this circulating capital is bought with bank money, this merely signifies

that a general claim on the circulating capital of the community has materialised in a concrete form. The seller who accepts the bank money in payment employs it when necessary in redeeming bills, and in this way bank money returns to the banks.

The covering of bank money by circulating capital is also important, because in this way the community's supply of money is adapted to the changing volume of production. When bank money is exclusively covered by short-term bills, this adjustment of the supply of means of payment to the actual volume of production, and consequently to the actual demand for money, is very effective.

Genuine commercial bills, which represent circulating capital in the process of production, supply the banks with a particularly suitable cover for the bank money outstanding. This is not because commercial bills represent a better security than sound Government stock or similar gilt-edged securities, but because the discharge of a commercial bill belongs, so to speak, to the normal course of the process of production. The process of production itself provides, normally, the means for settling those bills which are covered by the commodities worked-up in the process. Hence, when the banks seek the settlement of the bills which they hold, they need not necessarily exert a disturbing influence on the normal life of the community.

Besides commercial bills, *loans* come into consideration as cover for bank money. The pledge for the loan may consist partly of goods and partly of securities. In the first case, the real backing for bank money consists of circulating real capital. In the second case, the nature of the real cover of the bank money depends on the nature of the securities. These may be mortgages, shares, etc., representing fixed capital. This fixed capital must then be regarded as the real cover for bank money. If, however, the security for the loan consists of Government stocks or similar securities without real cover, there is no material cover for the bank money.

As a rule, only such commodities and securities as are dealt in on the Stock Exchange are used as cover for bank money. Stock Exchange transactions result in the mobilisation of a type of capital which is not mobile in itself – that is to say, which may not be

transferred in the normal course of the productive process. This mobilisation naturally increases to a great extent the suitability of the type of capital in question as cover for bank money. It means that, in normal conditions at least, the pledge may be sold at any time. As, in the case of loans granted against securities, the pledges are valued at a rate appreciably under that of the daily Stock Exchange quotation, it may be taken that claims for pledged loans are exceptionally suited to act as cover for bank money. However, it must be remembered that the normal course of the process of production does not guarantee in itself the repayment of these loans against pledges. Hence, when, in certain circumstances, banks are compelled to assert their loan claims by a forced realisation of the pledges, this is often impossible without producing disturbing influences which may become particularly harmful to the community in times of crisis, and, therefore, should be avoided by the banks as much as possible. In this respect, loans on pledges are greatly inferior to good commercial bills as a cover for bank money.

From the aspect of the monetary supply of the community, it may be justifiable to a certain extent for bank money to be covered by pledged securities, and therefore ultimately by fixed capital. For bank money is also used, to a certain degree, for the purchase of securities and fixed capital. As, however, this employment of bank money is of much less significance than its employment in the purchase of circulating capital, it is probably in the interest of a proper regulation of the monetary supply that the pledged securities should not be ranked equal to bills as cover for bank money. For example, covering a note issue by pledged securities should not be permitted, and the rate of interest on advances should be regularly kept above the discount rate. This side of the problem of suitable cover is often overlooked when people wonder why the banks, when seeking to find cover for their notes and deposits, give preference to the bills of a small trader or manufacturer over the much better security afforded by the debentures or shares of large concerns, or even over bonds issued by powerful States. The banks' action in covering the money they create should not only provide security, but the nature of the cover required should, incidentally, provide a

natural general limitation of the supply of means of payment. The total production of a community, but not the total wealth of a community, is suitable as a general limitation of this kind; the supply of commercial bills is suitable, but the supply of securities is not, because these represent fixed capital or mere promises to pay. The consequences of this are by no means generally followed up. Thus, in the case of England, where the employment of bills originated, we find that claims against loans play an important rôle as cover for bank money, especially in the case of the Bank of England.

In no circumstances, however, could a sufficiently strict limitation of the supply of means of payment be attained merely through the nature of the claims used as cover. As a rule, the bill circulation is probably considerably greater than the demand for media of payment. The total amount of circulating capital is even greater, and might therefore serve as cover for a still more extensive bill circulation. The aggregate value of securities pledged is naturally many times greater than the bill circulation. The actual circulation of bank money at a given moment corresponds only to a small fraction of the securities which might be used for issuing bank money.

#### § 47 *The Limitation of the Supply of Money through the Rate of Interest*

The fact that trade obtains bank money only in the form of interest-bearing advances by the banks is significant for the limitation of the supply of money in so far as, in such circumstances, only that amount of bank money can be put in circulation which corresponds to the needs of trade for advances. A bank, therefore, cannot force its notes and deposits upon trade; so the relation of the bank to the public is different from that of the State, which pays for goods or services by means of inconvertible paper money specially created for the purpose. The public can always rid itself of superfluous bank money by depositing its balances with the banks at interest, or it may pay off its maturing debts to the bank without taking up advances to the same amount. A certain limitation of notes and deposits is provided for by the manner of their

origin, as described above. It would, however, be too precipitate to draw the conclusion from this that it is impossible for banks to issue too much money.

The demand of trade for bank advances depends to a great extent on the rate of interest charged for these advances. The rights to command capital are bought and sold on the capital market, as we already know. These rights are at first supplied and demanded in the shape of money, and therefore the immediate object of the capital market is the control over money. As, however, banks can, within certain limits, create constantly maturing money-claims on themselves to any amount, the objectively determined scarcity of command over capital on the market is destroyed.

In general, the capital market is controlled by the rate of interest. If the rate is kept too low, the demand for capital will exceed the supply, and a scarcity of capital-disposal will arise, which will cause the rate of interest to rise again. This normal self-regulation of the capital market is disturbed by the intrusion of the banks with their supplies of bank money. If the banks maintain a rate of interest for their advances that is too low, and if the equilibrium of the capital market is thereby disturbed, this equilibrium may be restored simply by creating new bank money. As long as the scarcity of capital-disposal is relieved in this way, a rate of interest can be maintained that is too low and that does not tally with the real situation of the capital market.

Such conduct on the part of the banks must, if persisted in, extend its effect into the whole capital market. It is true, however, that the immediate interference of the banks is confined to the short-loan market. If the demand for short-period advances is amply satisfied, the result is usually that the supply of capital furnished by the public is diverted to a greater extent to the market for long-period or permanent capital-disposal, and this will express itself in a keen demand for mortgage securities and shares. Such a demand must result in depressing the rate of interest for the capital-disposal in question. The banks' low rate of interest will thus influence the whole capital market, and will have the same effect as if a genuine increase in the supply of capital had occurred.

The result of such conduct on the part of the banks will clearly be the creation of an artificial purchasing power, which does not correspond to any increase in commodities that may be purchased. A rise in prices must be caused thereby, and this means a reduction in the purchasing power of the unit of account. A position of equilibrium requires a definite restriction of the supply of means of payment, and this restriction can only be brought about by means of an interest-rate policy which is a true reflection of the real scarcity of capital.

A falsification of the capital market's situation through too low a rate of interest cannot arise without a reaction setting in. The appearance of counteracting forces is the necessary stipulation for any sort of stability of industrial life. In this case, the reaction is to be found essentially in the sphere of production. It is the function of the rate of interest to bring the demand for new capital-disposal into harmony with the supply – that is, with the newly-saved capital. As, however, the rate of interest has, as a rule, little influence on saving, its rôle as regulator of the capital market consists primarily in the correct restriction of the demand for capital-disposal – that is to say, in directing the process of production. If the market rate of interest is kept too low, the mistake will reveal itself in a relatively increased production of capital. Such an abnormal increase of the production of capital must gradually restrict the possibilities of remunerative employment of capital, and thus render new capital investments less profitable. Under normal conditions, this should bring about a fall in the rate of interest. However, when the rate of interest is already too low, the effect of the increased production of capital is to bring the situation of the capital market gradually into correspondence with the prevailing low rate of interest. But thereby the capital market is once more brought into a position of equilibrium. The disturbing influence of the banks' rate of interest ceases after this rate of interest becomes the normal rate. At the same time, the special competitive power on the capital market, which the banks have acquired by their low rate of interest, comes to an end, and the causes of the abnormal increase of bank money are removed. Only

if the banks fix their rate once more below that of the capital market can this increase in their money be continued. The artificial reduction of the interest-rate has, then, led to an artificially reinforced capital production, which is tantamount to a forced increase in the national savings. This is a reminder that one can speak of "too low a rate of interest" only in relation to the prevailing situation of the capital market.

We find, therefore, that excessive reduction of the rate of interest on the part of the banks brings with it an increase in bank money. Conversely, a rise in the rate which is not warranted by the situation of the capital market must result in a reduction of the circulation of bank money. Savings from income which are present in bank money flow into the banks, attracted by the high rate of interest, and are used by them merely to reduce the total amount of bank money. From this we may conclude that it must be possible to regulate the supply of means of payment through the rate of interest. Given a suitable interest-rate policy on the part of the banks, any desired limitation of bank money can be attained.

Under a gold standard, the creation of bank money is, as already seen, set an upper limit by the obligation of conversion. This conversion is, however, only to be regarded as a last resort for limiting an excessive amount of bank money. Normally, the supply of bank money to trade is regulated only by the banks' rate of interest.

In a country where the central bank issues notes with a forced currency, the quantity of notes may be increased indefinitely and, if all metallic money is abolished, may also be diminished indefinitely. The central bank in this case can regulate at will the supply of its notes, and thereby, indirectly, the total supply of the means of payment.

Of course, every important alteration in the supply of money takes a certain amount of time. The result of the rate of interest policy on the quantity of means of payment can only gradually take effect, but any desired effect can be attained. This assumes that the banks retain full control over their grants of advances and over their

interest policy. If the State makes some sort of claim on the banks which cannot be rejected, then the problem ceases to be one of purely monetary policy.

The question then arises: How shall the banks' interest-rate be fixed when it is desired to maintain a position of equilibrium? It could be replied that the bank-rate shall equal the real rate of interest on capital. It must, however, be noticed that a "real rate" in a sense other than that of the market rate is a very unreliable indicator for the banks' interest policy, since the market is, as already shown, directly and powerfully influenced by the banks' interest-rate.

The general answer to our question can only be that the banks at all times may increase their advances only to the extent which corresponds to the total of the savings which at that time have been placed at their disposal. If advances are increased still further, the increase can only take place by means of an increase in bank money. Such an increase is permissible to the extent that the general progress of industry means a greater demand for money, but otherwise the increase amounts to an unjustified creation of artificial purchasing power, which will depreciate the value of the unit of account.

In practice, the bank-rate, under a gold standard, is regulated mainly to protect reserves. The interest policy of the banks is then completely determined with reference to the maintenance of the gold standard. Where the gold standard has been thrown over and the notes of the central bank circulate with forced currency, the guiding principles for the interest policy are generally sought for in the maintenance of a definite relation between the domestic currency and the gold coinage of foreign countries. In both cases, the interest policy is set the task of maintaining the price of gold within certain limits. Naturally, this is possible only if the prices of commodities in general can be maintained at a certain level. It is also obvious that, in the last resort, the interest policy of the banks signifies a regulation of the general price-level. This connection, however, can only be explained by means of a theory of the value of money, to which we shall proceed in the following chapter.



§ 48 *The Significance of the Means of Payment in regard to the Utilisation of Income*

In § 8 we defined money income as being the remuneration, reckoned in money, which the individual receives for his contribution to the process of production. As we then ignored the existence of media of payment, we came to the conclusion that every item of income that the community receives is, right from the time of its creation, invested in real capital, and that for every period of time the total money income of society amounts exactly to the sum needed to purchase the total production in that period.

But when we have taken into account the use of media of payment, we are faced by the question of what is the significance of the existence of media of payment in regard to the utilisation of income. On that account we must investigate thoroughly whether and to what extent our earlier conclusions regarding the utilisation of income must be modified. It is at once obvious that income may either be drawn in media of payment or may later be exchanged against them. Income may therefore be used to acquire media of payment, or, in other words, may be invested in media of payment. This conception approaches the one which holds that income thereby loses its property of acting as purchasing power for goods. This conception is very widespread, and the most far-reaching conclusions have been drawn from it. Especially in America, the supposed existence of unused income has, in a dilettante fashion, been made the starting point not only for most questionable theoretical speculations, but also for far-reaching practical demands relating to industrial and monetary policy. Similar points of view are continually expressed in the writings of the financial Press throughout the world.

It is therefore necessary to examine further the question of the utilisation of income. If *A* invests his income in media of payment, and thereby increases his cash balance, this arises from his selling a commodity to *B*, whereby *B*, being a buyer, naturally diminishes his cash balance correspondingly. It is true that *A* has invested his income in media of payment, but at the same time *B* has realised

his investment in media of payment, and by doing so has rendered possible the purchase of the commodity. The employment of media of payment signifies not only that a part of income may be invested in them and so withdrawn from purchasing goods, but also that already existing cash funds appear, together with the newly-formed income, as a demand for goods. These remarks should be sufficient to dispel the most elementary misconceptions concerning the effect of investing income in media of payment.

If we survey a definite short income period, we find that the exchange economy at the end of the period has a certain amount of income bound up in media of payment. Normally, this amount is approximately the same as at the beginning of the income period. At the outset we may assume that this is exactly the case, that is, that the supply of the media of payment of the exchange economy has remained unaltered. If a certain part of the income arising during that period is invested in media of payment at the end of the period, and thus loses its purchasing power in respect of commodities, then, on the other hand, a corresponding purchasing power, which at the beginning of the period was tied up in media of payment, is now set free, and so the sales of goods are able to attain the same proportions as they would have done if no income during the period had served to acquire means of payment, but the total income had come forward as purchasing power for commodities. In itself, therefore, the investment of income in media of payment means no diminution of active purchasing power, and does not invalidate our general principle, that in every period the total income of an exchange economy exactly suffices to purchase the total output of production.

In a progressive economy the demand for money normally increases at the same rate as the general progress of the community. This increasing demand is satisfied by the creation of new media of payment. During such a constant expansion of the monetary supply, portions of income are constantly invested in the newly created media of payment. On the other hand, however, means of payment are also created which represent a corresponding amount of active purchasing power. When, for example, a central bank increases its note circulation by means of an increased discounting

of trade bills, these new notes represent for the first holder a cash fund for the time being. As long as this fund is not utilised, the note issue has clearly no effect on the sale of goods. It only serves to satisfy an increased demand for cash balances. If a certain commodity is bought with these notes, then the seller has invested a certain amount of income in bank-notes, and has withdrawn some purchasing power over goods for the present. For this the newly-created notes themselves have exercised a corresponding purchasing power. The sale of output has at no moment been hindered by the increase in the holding of money. Also, in a seasonal increase of the demand for money, such an increase in the supply of money may take place, and so portions of income may be invested in increased cash funds without the total sale of the output of production being thereby affected.

The condition is only that the supply of means of payment is widened in accordance with the increased demand. The same holds true when the increase in the need for means of payment is due to an inclination of the savers to postpone the investment of their savings and, therefore, to keep them in the form of money until a later period. If only the supply of means of payment is correspondingly widened, the total output of production can be sold in any income period.

It must, however, be noted that changes may take place in the supply of means of payment as well as in the demand for them. Such changes will increase or diminish the active purchasing power which is exercised during a given period, and thus the amount of this purchasing power may differ from the money income flowing in during the period. In such circumstances there is no reason for expecting the money income and the real income to correspond exactly to each other. This lack of agreement is, in this case, to be ascribed to changes in the relation between the supply of and the demand for means of payment, that is, a purely monetary phenomenon. This conclusion is important, because it dispels, once and for all, the general conception, according to which such disturbances in the normal flow of real income are to be ascribed to deeply rooted faults in the whole economic and legal organisation of our present

society. It is also important because it points the way towards a full explanation of the disturbances in question, and to the method by which they could be completely avoided. Two chief cases of such disturbances must now be examined.

First, let us consider the case where an abnormally increased supply of means of payment creates extra purchasing power, which, in accordance with the findings of the foregoing pages, must cause a rise in commodity prices. Equilibrium will be brought about, as we have found, by the fact that the results of production in a period are no longer bought entirely by the money income, but also in part by the newly created means of payment. In this case, the money income does not suffice to purchase the whole of the real income.

The contrary case is that where the supply of media of payment is reduced through debts being repaid to the banks, thus causing commodity prices to fall. A part of the money income will therefore be used in repaying these debts, and is not available as purchasing power for goods. Only the remainder buys the real income, which is, of course, only possible if prices are lowered.

An excess of means of payment can also arise when an abnormal fall in the demand for them is not accompanied by a corresponding reduction in the supply. The results will be the same as they were in our first principal case. On the other hand, a scarcity of means of payment can be caused by an abnormal rise in the demand for means of payment which is not met by any corresponding increase in the supply. In this case, the same consequences will ensue as in our second principal case.

According to this plan, we may form an estimate of the various disturbances which happen in actual practice, in that the active purchasing power will deviate from the total money income as a result of alterations in the relative supply of means of payment.

The widespread view that the money income does not suffice to purchase the total results of production during an income period, and that this is the general cause of reductions in turnover and thus of unemployment, is based, in reality, if it has any justification at all, on the consideration of a state of affairs which corresponds to

our second principal case. In an economic depression, entrepreneurs will repay their debts to the banks, and for this purpose will use bank-notes or will draw cheques on their bank accounts; in this way, the supply of means of payment will be reduced. Consequently, commodity prices will begin to fall. The recipients of income will then adopt a policy of holding back their money. They reduce their outlay in the hope of having the opportunity later on of buying more cheaply, and they tend, for the time being, to keep their savings in money form, as they fear that, on account of a continued fall in prices, any real investment will result in losses. Thus at the same time as the supply of money is reduced the demand for money increases. There arises a scarcity in the supply of money, which exerts a pressure on the prices of commodities. The banks usually try to reduce this pressure by creating more money by means of a more liberal credit policy. However, as long as they do not perform this task with sufficient energy, or if they proceed at too slow a rate, the fall in prices will continue. Confidence cannot be restored; the depression, with its accompanying phenomena of reduced turnover and unemployment, deepens. The view becomes general that this is all due to deep-seated defects in our economic and legal organisation, which cause purchasing power to lag behind productive capacity. In reality, the fall in the general price-level which plays the central part in the whole process is a purely monetary phenomenon due solely to an insufficient supply of money. If the banks were only to increase the supply of money sufficiently through issuing more notes and creating more cheque means of payment, then they would be able to prevent a fall in the general price-level. It would then be far easier to overcome the remaining difficulties and to restore confidence once more. But we can never hope for such a rational bank policy as long as the misconception prevails that it is inherent in our economic system for purchasing power to be insufficient to purchase the total production.

The popular conception that saving is carried too far and that the complete sale of the results of production is prevented by an "under-consumption" can now be fully explained. If we assume the supply of money to be normal, such a result is impossible. Under

this assumption the total money income always purchases the total real income; only it is divided into two parts, one of which buys consumption goods and the other capital goods. The theory of "over-saving" assumes, in its more elaborate form, that the savers do not invest their savings for some reason or another, so that the active purchasing power is thus reduced and the complete sale of the results of production is rendered impossible, with the result that saving beyond a certain limit does not give rise to any commodity production, but that it simply disappears as income. In this representation of the case, one overlooks the fact that the increased demand for money should be satisfied under an enlightened banking policy. Then there would be no reduction in active purchasing power, and the act of saving need not result in reduced sales or falls in prices.

The developments here considered are essentially a result of a supply of money that is too small, and to that extent are monetary phenomena. From a practical point of view, it must be emphasised that the supposed attitude of the saver is usually occasioned by a general fall in prices which could have been prevented by an extension of credit if carried out early enough. Complaints about excessive habits of saving are in such circumstances calculated to confuse the mind of the public and to distract attention from the shortcomings of monetary policy.

## CHAPTER XI

### THE VALUE OF MONEY

#### § 49 *Introduction*

OUR study of money has shown that the scale in which all prices are reckoned, and which in itself is an abstract scale of reckoning, can possess stability only when there is a certain scarcity of the media of payment valid in the price-scale. If media of payment were available in unlimited quantities, any price could be offered for goods and services. A certain quantitative limitation of the supply of the media of payment is the indispensable condition of a stable price-system – that is, a definite equilibrium between money and commodities. It is also clear that the quantity of money must exert a certain effect on the price-system, in the direction of a greater monetary supply having a tendency to force prices to a higher level. With a greater supply of money one receives less for the unit of money. The *value of money* is lower.

The scarcity of the supply of money, which is necessary for the maintenance of a stable value of money, naturally applies to the whole supply of the means of payment. For money to have a stable value, there must be not only a definite scarcity of money in the narrow sense, but also of other means of payment which, although not money, can be used for payment of sums reckoned in money; and the value of money must be dependent to a certain extent on the quantitative limitation of all these means of payment. Actually, every means of payment, as we have found, is primarily distinguished by the characteristic limitation of its quantity. In the two preceding chapters we have seen the special way in which the limitation is applied to metallic money, paper money, and bank money. In the study of the individual forms of money, as well as that of means of payment which are not money, this factor limiting

the supply of the means of payment came always to the forefront. Then, however, we could consider this limitation only as a necessary condition of a stable value of money, and we had to leave for the time being its effect on the value of money – that is, of the quantitative dependence of the value of money on its quantity. What remains now to bring our description of the monetary system to a logical conclusion, and thereby to attain a sound theory of money, is a detailed examination of the connection between the value and quantity of money.

As the value of money, to be stable, requires a definite restriction of the supply of the means of payment, every increase in a means of payment which takes place without a corresponding driving-out of other means, must exert an influence on the value of money. An inquiry into the value of money must therefore take account of the total supply of means of payment. Hence it is not possible, as is so often attempted, to treat means of payment which are not money apart from the treatment of money. The central point of the study of money, the problem of the value of money, can be completely examined and answered only if account is taken of all means of payment which are actually used for payment in the respective price-scale.

It must have been observed at an early date that an increase in the media of payment brings about a general rise of prices – that is, a falling value of money. After the discovery of America the European stock of the precious metals increased to such an extent that the resulting rise in prices must be noticed and ascribed to the proper causes. The history of earlier paper currencies was especially suited to make clear the fact that an unlimited increase in a means of payment must lead to an unlimited rise in the price-level, and thereby to a depreciation of money to the point of complete worthlessness. In the so-called bank-restriction period in England, at the time of the Napoleonic Wars, when the notes of the Bank of England had forced currency, there was finally shown, after much dispute, the nature of the effect which an arbitrary increase of bank-notes exerts on the monetary system, and especially on the value of money. From this time a real theory of money began to develop.



In the centre of these theories there are always found inquiries into the connection between the quantity and the value of money, and in this respect scientific thought has come to fairly definite conclusions. How little, however, the scientific view on this connection was accepted by the general public, and in particular by political leaders, not to speak of the directors of the central banks, was clearly shown after the outbreak of the Great War. Official pronouncements sought to maintain as long as possible the fiction that, in spite of any increase in the means of payment, the currency unit remained unaltered. The eyes of the public were opened only by the unfortunate experiences of those countries where the supply of money was at last increased a million- and even a billionfold and where the value of money fell correspondingly, and this catastrophe finally caused the point of view advocated by science to be accepted. This success, however, is not complete, for in countries with moderate currency depreciation the old misconceptions are still sought to be maintained.

It is clear that scientific analysis cannot content itself with the fact of a connection between the quantity and value of money and with the truism that a certain value of money postulates a definite limitation of the supply of money. Therefore, we must attempt to express numerically the effect of the quantity of money on its value – that is, to express arithmetically the value of money as a function of its quantity. To this end a clear definition of the value of money is especially needed.

The concept of the value of money, like the concept of value in general, is not fixed. However, the concept of value could, in so far as it is a question of goods and services, be replaced by the exactly determined concept of price. This method of fixing the concept of value is not possible in the case of the value of money, for, as prices are measured in the unit of currency, the price of the unit of currency is always equal to one, and so the value of money is always formally constant. An idea of the value of the money of a country may be obtained when it is measured in another currency. The value of the money is then clearly seen to be determined by the quantity of goods or commodities which may be obtained for it. The unit of

currency represents a greater or less quantity of goods according to whether prices are low or high.

These reflections show the way that must be taken to attain a clear idea of the value of money in a closed economy. A falling value of money expresses itself in a general rise in commodity prices. We have, then, simply to define the value of money as the reciprocal of the general price-level. Of course, the problem of defining the value of money is not yet completely solved, for there always remains the difficult question of how the general level of prices is to be defined in order to reflect as truly as possible general movements of prices. We shall deal with this problem more closely later on (§ 52), but will presuppose at present the concept of the general price-level as being already known. The whole theory of the value of money then reduces itself to a theory of the changes in the general price-level.

### § 50 *The Quantity Theory of Money*

It was natural to suppose that money, as such, has no other task than to purchase commodities or to make general payments, and that for this task any given quantity of money must suffice if only prices stand at a suitable level. This conception is expressed in the *quantity theory*. In its primitive form, the theory is reduced to the statement that money buys commodities. The total quantity of money buys the total quantity of goods. The total value of money equals the total value of commodities, and is thus independent of the quantity of money. From this it follows that the value of the unit of money is inversely proportional to the quantity of money. This is the substance of the quantity theory of money as it is repeatedly given in the older economic literature.

It is, however, easy to understand that an exchange between all commodities on the one hand and all the money on the other hand cannot be taken as given. The quantity theory has therefore been more exactly formulated in the proposition that the general price-level is determined by the relation between the money in circulation and the commodities which come upon the market. Money and goods have an influence on each other only when they come into

contact. Let  $T$  be the total quantity of goods on the market,  $P$  the general level of prices, and  $M$  the quantity of circulating money; then the quantity theory may be expressed by the formula:

$$PT = M.$$

It must be specially noted that this proposition relates to a *given point of time*. The quantity of commodities and the quantity of money are two conceptions which contain no time element, and may therefore be thought of only at a given moment. If, however, the conception is strictly confined to a given moment, one cannot explain why the money should purchase the total quantity of commodities. The process under which this purchase is completed takes time. If one wants to take account of the result of this process, it is obviously necessary to base the inquiry on a definite *period of time*. The commodities which are sold within this period must be paid for with the money in circulation during the period. This alteration of the proposition brings a new difficulty into the problem. As soon as one considers a period of time, the possibility is always present that in this period several payments will be made by one and the same coin. The volume of payments is no longer measured by the quantity of money alone, but also with reference to the number of payments made in the period by each unit of money. This brings one to the concept of the *velocity of circulation* of money. In order to give a definite meaning to this concept we may assume that each piece of money makes the same number of payments within the period. Let  $V$  be the number of payments which are made by each piece within the period, and let  $T$  be the quantity of commodities which are sold within the period; then the quantity theory would be expressed in the formula:

$$PT = MV.$$

This equation, which must be applied to the total of all payments (and not only of commodity payments), and in which  $T$  is to be taken as a measure of the real turnover, states that the volume of payments which have to be made within a certain period is equal to the volume of payments which can be made with the given quantity of money within the period.

Clearly, one cannot generally assume such an absolutely uniform utilisation of all the pieces of money. The payments made by the total quantity of money are in reality equal to the sum of the payments made by the individual pieces of money, the payments effected by an individual piece of money being determined by the product of its nominal value and the number of times it effects payments within the period. Let  $m$  stand for the nominal value of the single piece of money, and  $v$  for the number of payments effected by it. Then the total payments effected is given by the expression  $\Sigma mv$ . The average velocity of circulation of money can be rendered by the equation  $V = \frac{\Sigma mv}{M}$ , that is, by dividing the total of the payments effected by the quantity of money. This, however, presupposes that the quantity of money remains unaltered within the given period. For one must note that the payments made by the total quantity of money refer to a definite period, whilst the quantity of money must be taken to refer to a given moment. A comparison of these two quantities must tacitly assume that the quantity of money remains unaltered during the whole period. If (as in reality) this is not the case, the average velocity of circulation of money can be defined only by taking, instead of the real period, a fictitious one in which all conditions remain constant and in which the payments within the period may be compared with the quantity of money at the commencement of the period. The quotient obviously gives the average velocity of circulation at the beginning of the period.

The velocity of circulation of money is to a certain extent an independent factor of the pricing problem. The frequency with which a coin is used in payment within a given period depends on the habits of the people regarding the holding of cash balances, on the degree of development of the exchange economy, on the density of the population, on the development of the transport system, etc.; in sum, on the factors which, in the theory of money, have to be taken as given. This, of course, does not exclude the possibility that changes in the general price-level or in the quantity of money may have a certain influence on the velocity of circulation

of money. When this velocity is represented as an independent factor, this only signifies that it has independent causes outside the pricing problem.

The substance of the quantity theory is always that the actual quantity of money will occasion a certain number of payments and that the price-level is forced to adapt itself to it. In the primitive quantity theory, this point of view is expressed in the proposition that the total quantity of money in existence must buy the total quantity of goods. In later forms of the quantity theory, this proposition is modified by the assumption that the velocity of circulation of money remains constant. This means that in the unit period there must be a definite volume of payments determined by the quantity of money. It is of the essence of the quantity theory to attempt to make changes in the general price-level dependent on changes in the quantity of money.

If, however, the quantity of money is taken as an independent factor in the determination of prices, it is naturally necessary to take the quantity of money itself as determined by objective factors, lying outside the determination of prices, or at least as equally determined by these external factors. The problem of finding the determining factors of the general price-level or of the value of money is, of course, not solved until one has got down to factors which themselves may be regarded as objectively given.

With reference to the quantity of money, it must be noted in this connection that the quantity theory ascribes to the *circulating* quantity of money alone the rôle of exerting an influence on the fixing of prices. This circulating quantity of money is, however, not independently determined, since it is never definitely distinguished from the quantity of money lying in the reserves of the banks or from any hoards of money in private hands. The money goes into circulation from the reserve stocks, and, conversely, according to the daily needs of trade. The statement, then, that the circulating quantity of money determines the general price-level is, in such circumstances, devoid of any meaning. Rather, the general price-level is one of the factors which determined the actual circulating quantity of money. To that extent the quantity theory

leaves the problem of the determining factors of the value of money still unanswered.

If it is wished to ascribe changes in the general price-level to objectively given factors, the general price-level must be linked up with the *total* quantity of money. This can be done if, in the equation  $PT = MV$ ,  $M$  represents the total quantity of money, whilst  $V$  represents the velocity of circulation of this quantity of money – that is, the average amount of payments effected in the period by each unit of the total quantity of money. If two cases are compared in which the payments effected by a given quantity of money are the same, and where the volume of the real turnover  $T$  is also equal, then the general price-level  $P$  is directly proportional to the quantity of money  $M$ .

This proposition is of definite significance as long as the total supply of money can be taken as a given quantity. This is the case with a paper currency, where the State has fixed the amount of the paper money. If the paper money is issued in the form of bank-notes with forced currency, then, as we found in our inquiry into bank-notes (§ 45), the direct effective limitation of paper money is found in the credit terms of the banks. Here, at any rate, we strike upon an objective factor which can be considered as a cause determining the value of money. If all independent limitations on the issue of paper money cease, the determination of prices becomes an entirely vague problem, and, as painful experience shows, prices can rise indefinitely.

On a gold standard, conditions are different. Even the total quantity of money is then no independent factor of the problem. For the quantity of money is not separated from the total supply of gold, but rather does gold flow from the monetary to the non-monetary gold supply, and conversely, and these movements to and fro continue all the time. The amount of gold that is put to monetary uses may depend, among other things, on the needs of trade for money, and thus on the general level of prices. The existing monetary gold stock thus provides no objective basis for the determination of the value of money. As a matter of fact, it is only possible to relate the general level of prices to objective determining factors

when the price-level is regarded in its connection with the total stock of gold. This stock is either given absolutely, or, if gold is continually produced, it is determined also by the technical conditions of production, and thus in both cases the explanation of the general price-level is carried back to objectively given factors.

In the equation  $PT = MV$ ,  $M$  must now represent the total supply of gold, and  $V$  the payment effectiveness in this period per unit of this supply of gold. If we consider two cases where the payments effected per unit of the total supply of gold is equal, and where real turnover is the same, then the quantity theory can be expressed by saying that the general price-level is directly proportional to the total supply of gold.

Thus far, we have assumed that all payments are made in money. There still remains the problem of how the value of money is determined when, besides actual money, bank-notes and bank deposits are reckoned as media of payment. A theory of the value of money which places the price-level in relation to the volume of payments made within a given period must clearly add to payments made by ordinary money all those payments made by bank money. We have, then,  $PT = Z_1 + Z_2 + Z_3$ , where  $Z_1$ ,  $Z_2$ ,  $Z_3$  represent respectively the volume of payments made by cash, by bank-notes, and by cheque. Exactly as we replaced formerly  $Z_1$  by  $M_1V_1$  we may now replace  $Z_2$  by  $M_2V_2$ , where  $M_2$  represents the circulating quantity of notes, and  $V_2$  the velocity of circulation of the notes. If the velocity of circulation is assumed to be equal in both of the cases contrasted, our equation shows how an increase of the note circulation leads to a proportional increase in the payments effected by the notes. Similarly, we can substitute  $M_3V_3$  for  $Z_3$ , where  $M_3$  represents the total amount of those bank deposits upon which cheques may be drawn. As a physical velocity of circulation of bank deposits is impossible to define,  $V_3$  must be defined as the payments effected in the period per unit of deposits. If the payment effectiveness of deposits is assumed to remain unaltered, a rise in the total volume of deposits will occasion a proportionate increase in the payments effected by them. By assuming the number of payments effected to remain unaltered, and also that the utilisation of

media of payment remains the same, fluctuations in the general price-level are occasioned by three variables, namely, the quantity of money, the note circulation, and the volume of deposits.

These variables, however, are not completely independent. The volume of the notes and deposits, with a given quantity of money, is regulated by the credit terms of the banks. These terms are thus an independent factor in the pricing process. On the assumptions given above, the general price-level is determined by two factors: the credit terms of the banks and the circulating quantity of money. As, however, under a gold standard, the circulating volume of money is not an independent variable, but depends on the total supply of gold, we reach the conclusion that fluctuations in the general price-level, when the real turnover is constant, are determined by the total supply of gold and the credit terms of the banks, as well as by the degree to which the media of payment are utilised. This result may be best expressed if we return to the original formulation of the quantity theory, letting  $M$ , in the equation  $PT = MV$ , equal the total supply of gold and  $V$  the total payments effected in the unit period per unit of the supply of gold. In the relative effectiveness of the media, the most important factors are the more or less extended use of bank money and the correlated utilisation of the gold reserves of the banks, as well of the total supply of gold for monetary purposes. These two factors are at all times directly influenced by the credit terms of the banks. Alongside must be considered fluctuations in the degree of utilisation of the various media of payment. If the relative effectiveness is equal in both cases to be considered, it follows that the general price-level is proportional to the total supply of gold.

For the present we shall not inquire into the correctness of the propositions formulated in the preceding paragraphs. Our task has been to ascertain clearly what is precisely the substance of the quantity theory on different assumptions; or, rather, what must this substance logically be. With this reservation we shall take the analysis of the quantity theory a step further.

In its classical form the quantity theory links the value of money directly with the volume of payments. We ourselves have stated



the theory in this way, but this manner of viewing it is not absolutely necessary. The value of money may be considered in its connection with the existing demand for cash balances – that is, the demand for money. There is, however, a difference between these two methods as regards the time limits of the problem. The volume of payments must necessarily refer to a definite *period*, whilst the demand for cash balances refers to a *point of time*. It is natural for a theory, which wishes to explain the dependence of the value of money on its quantity, to concentrate upon a definite point of time, as the quantity of money itself must, by definition, refer to a definite period of time. The exchange economy, with definite habits of payment, needs a definite stock of money at the beginning of the period in order to carry out, in a certain period of time, a certain volume of payments. There exists, therefore, a definite relation between the demand for money at a given moment and the payments effected in the subsequent unit period, and it is quite as natural for the theory of the value of money to proceed from the demand for money as from the payment effectiveness of money.

If we wish to examine the value of money in connection with the demand for it, we may treat the problem of the value of money in the same way as we have treated the general problem of pricing (Chapter IV.). The variable which must be determined in the present case is the general price-level, which we term  $P$ . For the present this variable may be taken as given. The general problem of the determination of prices is then completely solved, for the prices can be determined even as to their absolute amount. From the view-point of pricing, the demand for money is then determined. We will assume that the demand for money, in conditions which otherwise are equal, is proportional to the general price-level. This signifies that when two independent cases are compared, in which all of the other factors influencing the demand for money are equal, the demand for money is in direct proportion to the general price-level. The demand for money may then be given as the product of two factors – the general price-level and the demand for money at a price-level chosen as normal.

With a price-level which is to be taken as normal or basic, the

demand for money is a variable independent of the price-level, and primarily depends on, and is proportionate to, the volume of the real turnover  $T$  – that is, the turnover measured in money at the normal level of prices. At the beginning of a unit period with a volume of turnover which is selected as representing the normal, the demand for money is determined by the degree of development and the organisation of the money economy. The demand for money when the price-level is 1 and when the real turnover is 1 may be termed the relative demand for money, and expressed by the letter  $R$ .  $R$  then equals the demand for money, at a certain point of time, per unit of the payments effected in the ensuing unit period – that is,  $PT$  multiplied by the relative demand for money  $R$ , and thus equals the product  $PTR$ .

We have dealt at length with the determining factors of the relative demand for money in the previous chapter. The relative demand for actual cash depends on various factors, as we have seen, especially on the concentration of cash balances in the banks and on the replacements of money in private funds by bank-notes. We found that the relative demand for money is diminished in the higher stages of economic development. At a given moment and in a given country this relative demand for money may be taken as given.

When the demand for money is given, equilibrium requires the demand for money to be equal to the total quantity of money present  $M$  – that is, that  $PTR = M$ . This equation suffices to determine the unknown – the general price-level. The dependence of the general price-level on the quantity of money and the relative demand for money is thereby shown, and, by a comparison of the two independent cases, where  $R$  and  $T$  are unaltered, we find that the general price-level is directly proportional to the quantity of money. This result brings us back to the quantity theory.

If we compare this equation for determining the general price-level with the earlier equation  $PT = MV$ , we find that  $R = \frac{1}{V}$  or in other words the demand for money per unit of the payments effected in the unit period is the reciprocal of the velocity of

circulation of money – that is, the reciprocal of the payments effected by the unit of the quantity of money in the unit period, which is self-evident. The two equations given for the determination of the general price-level are identical, which is natural, since an unknown can only be determined by *one* equation.

The equation which states that the demand for money equals the quantity of money, determines the price-level only when the quantity of money can be taken as given. On a gold standard, there is no sharp division between the quantity of money and the stock of gold. In order to base the general price-level on objectively determined factors, the total demand for money must be compared with the total supply of gold. The following procedure must then be adopted. In the first place, the general price-level must be assumed as given. In this manner, all prices are settled, and the demand for gold for industrial purposes is known, as is also the demand for gold for monetary purposes. Thus the total demand for gold is known. This, however, must equal the total supply of gold, and through this equation the general price-level is determined. We may assume here, in order to uphold the quantity theory, that not only the demand for gold for monetary purposes, but also the industrial demand, is proportional to the general price-level. If this is the case, the total demand for gold is clearly proportional to the general price-level, and as this demand must equal the total supply of gold, the general price-level is proportional to this supply; this once more agrees with our conclusions above.

The assumption that the non-monetary demand for gold is proportional to the general price-level, is not in itself improbable. For as gold is used for purposes of ornament, it is chiefly desired on account of its value and not on account of its quantity. Then the value of a unit of gold should, other things being equal, be inversely proportional to the total quantity of gold. If it has been assumed that the monetary demand for gold increases proportionately to the general price-level, the assumption that the industrial demand for gold is also proportional to the price-level means only that the relation between the monetary and the industrial demand for gold is independent of the general price-level; in other words, that the

quantity of gold distributes itself in the same proportion between its two chief uses independently of the size of the total quantity of gold. It must be noticed, however, that it is sufficient, for upholding the quantity theory, to assume that the *total* demand for gold is proportional to the general price-level, and to leave open the possibility of changes in the monetary and industrial demand.

### § 51 *The Significance of Changes in the Quantity of Money*

The theory of the value of money is of direct significance as regards practical monetary policy only in so far as it is able to explain how *changes in the quantity of money* react on the general price-level. It is usual, in the teaching of economics, to represent the effect of changes in the quantity of money by the popular formula that "if all the cash balances of the community were to be doubled at a given moment, then, *ceteris paribus*, the general price-level would also be doubled."<sup>1</sup> This proposition is clearly quite outside the results of our analysis of the quantity theory up to now. For it is here assumed that an increase in the quantity of money takes place in a given national economy, and a definite statement is made regarding the result of this alteration. From a comparison of two given independent cases one comes to the problem in which the inner relations of the whole process of economic change must be considered; that is, from a static problem one comes to a dynamic one.

This formulation of the quantity theory necessarily assumes that all other factors are unaltered, and this assumption is generally made without considering its justification. But it must be clear from the first that an increase in money may also exert an influence on the "other factors," especially on the velocity of circulation of money and on the relation between bank money and cash, and perhaps also on the total sales of commodities. The reservation of *ceteris paribus* is here quite inadmissible. If one cites the quantity theory, including this reservation, as being obviously correct, then attention is diverted from very important sides of the problem before us. Such

<sup>1</sup> Mill, *Principles of Political Economy*, Book III., chap. viii., § 2.

a procedure hardly promotes the development of sound scientific criticism.

As long as we consider two distinct and independent cases, as we have done in the preceding paragraphs, the assumption that the "other factors" are equal is justified, for we can select the two cases to be compared as we wish. If, however, in a given case we assume that the quantity of money is suddenly increased, we are not justified in making an indefinite number of assumptions about the new situation which results. What may be assumed is that no new disturbing factors of an external kind arise, but no further assumptions may be made regarding the effects of the supposed increase in the quantity of money, for precisely those effects have to be studied now.

When we pass from the static to the dynamic treatment of the problem of the dependence of the value of money upon its quantity, we encounter difficulties of quite a new nature, for whose solution the methods used hitherto are insufficient. Already by our treatment of the static side of the problem of the value of money we have found that the quantity theory is not so self-evident as people sometimes profess, and that, to support the theory, it is sometimes necessary to make certain assumptions, in themselves not exactly improbable, but whose study lies outside the scope of purely theoretical analysis and requires an examination based on the actual facts of economic life. Even more defective are the expedients of pure theory when we turn to the dynamic problem. The effect of an increase in the quantity of money upon its velocity of circulation, upon the extension of the use of bank money, or upon the volume of the turnover, and thus the final result on the general price-level, are all problems which cannot be finally solved by the expedients of theory.

If one seeks to attain a notion of the direct effects of a rise in the quantity of money, assuming that no further independent factors come into play, one must assume that there will be a decrease in the velocity of circulation of money, a relative increase in the use of cash in relation to the use of bank money, and a rise in the cash reserve of the banks, and perhaps also an increase in trade activity. These are,

however, effects which result in a rise in the demand for money, and thus counteract the rise in the quantity of money. If the demand for money is in this way increased to the same extent as the quantity of money, clearly the effect of the rise in the quantity of money is completely counterbalanced, and the effect on prices, which should take place according to the quantity theory, does not come into play. If there is only a small rise in the demand for money, a rise of prices is to be expected, but not to the same extent as the simple quantity theory would lead one to expect. The opponents of the quantity theory have repeatedly drawn attention to the results of this nature, which must follow from an increase in the quantity of money, and have emphasised that these results are too important to be neglected, and that they must always in practice cut across the effects, according to the quantity theory, of an increase in the quantity of money. From this people have concluded that the whole of the quantity theory must be rejected as a theoretical speculation unfit for any practical application. The defence of the quantity theory against these attacks has generally been carried on in a very feeble manner. Even Fisher, who proclaims with such emphasis the quantity theory as an obvious truism about which no doubt is to be allowed, has not been able to do more than represent these effects of an increase in the quantity of money as merely temporary disturbances without great significance; and, although he makes many valuable observations in support of this view, he is prevented by his method in general from making even an approximate estimate of the extent and duration of these effects. In such circumstances it is still an open question how far the quantity theory holds good.

It is clearly outside the powers of pure theory to state the quantitative extent of the above-mentioned effects of a rise in the quantity of money. It is equally impossible for theory to solve the problem of how far these effects will extend into the future. It is perhaps probable that their immediate importance will predominate and that they will lose their power with time, and that, therefore, in actual fact the rise in the quantity of money will gradually result in a corresponding rise of prices. For if the effects now under review are simply the results of a transition, one would expect that the

prophecies of the quantity theory would be the better fulfilled the longer the transition period, and the more the two cases to be compared may be considered as independent of each other. Such discussions, however, have no real power to prove anything. They only show how indispensable it is to treat empirically the entire theory of the value of money on the basis of facts systematically collected for this purpose.

Such an inquiry must first ascertain changes in the general price-level during a certain period, in order to proceed to an analysis of the probable causes of these changes. The available data about the quantity of money and its utilisation by means of bank money, as well as about the volume of the real turnover, must be brought together, and in suitable form they must then be compared with the general price-level. The inquiry must be conducted, paying, naturally, special attention to the gold standards of the pre-war period, and also to the later paper standards. As, in the case of the gold standard, the quantity of money is not sharply divided from the stock of gold and is not an independent magnitude, it is necessary, as has been mentioned above, to compare the development of the general price-level with the development of the total stock of gold in order to examine how far changes in the general price-level may be traced back to changes in the quantity of gold, and what variations in the general price-level remain to be explained by the effects of the other variables of the problem.

This shall form the subject of the following inquiry. First of all, we must focus our attention upon the methods to be used in ascertaining changes in the general price-level.

### § 52 *The Measurement of the Price-level by Index Numbers*

The movement in prices may appear either as a change in all prices, or at least in the vast majority of them, in one and the same direction, or as a series of changes in the different prices relatively to one another without a perceptible movement of the whole mass of prices in either direction. Only movements of the first type are reckoned as changes in the value of money, whilst movements of

the second type are possible with an unchanged value of money. In practice, price movements of both kinds occur simultaneously. In an inquiry into the value of money, it is necessary to distinguish the two kinds of movements, and to ascertain to what extent a general change of prices has occurred in a certain direction; or, in the language of mechanics, how far a shifting of the centre of gravity of the price-level has taken place. This is the problem the solution of which has been attempted by the formation of index numbers for the general price-level.

In order to form an index for this general movement of prices in one direction, we must first select a group of representative prices, since in such a calculation it is practically impossible to take account of all prices. We must confine ourselves to typical standard commodities of a practically fixed quality. In this respect, retail prices are less suitable, because, among other things, the conditions of sale alter considerably (delivery of the goods, credit, etc.). Services and immaterial goods, generally, cannot as a rule be taken into consideration. Rents, for example, even when paid for the same house, are the prices paid for a convenience of very changeable real content, for the district may become more or less modern, central, easily reached, and so forth. Wages cannot be included, because, being the share of the worker in the total fruits of economic production, they normally rise in a progressive economy, even if commodity prices remain unchanged. Therefore, only the wholesale prices of the most important commodities may be considered.

After a group of standard commodities has once been selected, the individual prices are expressed as a percentage of the prices of a certain base year, and thus the absolute prices are replaced by index numbers. We then have to calculate a certain average of the index numbers so determined. This average must be chosen so that relative changes of prices in relation to one another have the least possible effect on it; that is, so that changes in the average express as faithfully as possible changes in prices in one direction.

In order to minimise the effect of chance occurrences, it may be desirable to cause the more important commodities to have a greater influence on the index number. This is done by calculating



a "weighted" average of the price index figures; each price index figure is included once, twice, thrice, etc., according to the relative importance of the corresponding commodity, and the general price-level is then shown by the average of the total number of items.

One may also seek to ascertain changes in the general price-level by observing the effect of price movements upon the collective price of a certain quantity of commodities. If the selected group of commodities is sufficiently comprehensive and representative, one can assume that relative price movements neutralise each other in their effect on the collective price, so that changes in the collective price of the group of commodities only reflect real changes in the general price-level.

The technique of calculating index numbers has been treated in detail in the most recent literature. Special notice must be taken of that most meritorious book by Irving Fisher, entitled *The Making of Index Numbers*. We may content ourselves here with a description of the index numbers which we shall use in what follows.

The well-known index numbers compiled by Sauerbeck<sup>1</sup> for the period 1846-1912 are not "weighted," but account is taken of the relative importance of the commodities included, by taking the prices of several qualities or stages of production in the case of the more important commodities. For each of the 45 articles the yearly average of the monthly market prices is reckoned and expressed as a percentage of the corresponding average prices for the period 1866-77. The sum of the 45 price index numbers divided by 45 is the Sauerbeck index of the general price-level. The various commodities are grouped in the following way: vegetable foodstuffs (8 articles), animal foodstuffs (7 articles), sugar, coffee, and tea (4 articles) (total foodstuffs; 19 articles), minerals (7 articles), textile materials (8 articles), various materials (11 articles) (total materials, 26 articles). For each of these groups a special index number is also calculated. The numbers of the articles in each group show the relative weight that is assigned to each individual group in the calculation of the total index. In order to obtain an insight into this

<sup>1</sup> *Journal of the Royal Statistical Society*, 1886-1913.

method of weighting the individual articles, the 8 articles of the first group are given. They are: English wheat, American wheat, wheat-flour, barley, oats, maize, potatoes and rice. Wheat, which is very important in English trade and consumption, thus has in this group a relative importance of  $\frac{3}{8}$ , and in the total index a relative importance of  $\frac{3}{16}$ .

To obtain a fairly accurate idea of the movements of the general level of prices, expressed in *gold*, since the middle of the nineteenth century, we may use the fairly reliable Sauerbeck index numbers. English index numbers are to be preferred in this connection, for three reasons: first, because England in the period under review – the period after the middle of the nineteenth century – was mainly a free trade country; secondly, because the English market in this period was pre-eminently the market for world trade; and thirdly, because England throughout the period maintained an effective gold standard. For the problem with which we are here especially concerned, that of the influence of the gold supply of the world on the value of money under a gold standard, the last-mentioned circumstance is naturally of decisive importance.

For these reasons, we shall base the following inquiry on the Sauerbeck index numbers.<sup>1</sup> In order to obtain a rough idea of the development of the general level of prices throughout the nineteenth century, we shall add to the series of the Sauerbeck index numbers, which start from the year 1846, the index numbers calculated by Jevons<sup>2</sup> for the period 1800–45. Jevons's index numbers extend to the year 1865. Thus the two series cover the twenty-year period 1846–65. The average number for this period according to Jevon's index is 75.3, and according to Sauerbeck's is 93.1. These two series will probably best be represented on one and the same diagram if one chooses such scales that these average figures are in agreement.

On studying Sauerbeck's index numbers, one is struck by the fact that the general price-levels for the two years 1850 and 1910 were very nearly identical. The index number for 1850 is 77, and

<sup>1</sup> These are reproduced in Table I. in the Appendix.

<sup>2</sup> *Wholesale and Retail Prices*, 1903 (321), p. 450.

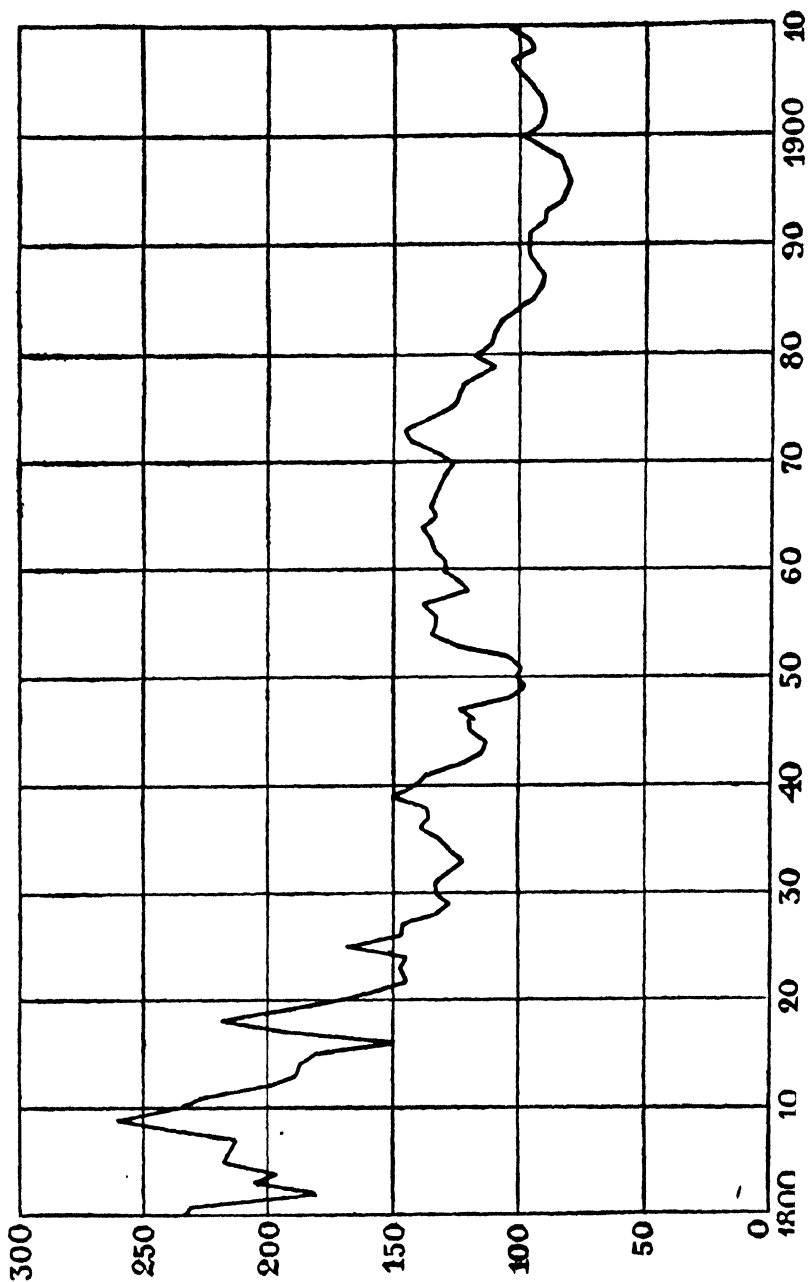


FIG. 2.—INDEX CURVE OF PRICES, 1800-1910

that for 1910 is 78. In making such a comparison, it is important not to be content with contrasting two isolated years; the years following should also be taken into account. We find that the average of the index numbers for the four years 1848-51 which followed the crisis of 1847 amounted to 76, whilst the corresponding average for the four years 1908-11 following the crisis of 1907 amounted to 76½. The coincidence between the general price-level for 1850 and that for 1910 is thus very marked. We shall take this common price-level as our normal level and make it equal to 100. The scale for Jevons's index is adapted to the selected scale so that the average figures for the period 1846-65 correspond for both series.

The diagram (Fig. 2) is drawn according to these principles. All figures for the general price-level are therefore expressed as percentages of the normal level, which corresponds to the Sauerbeck figure of 76.

### § 53 *The Price-level and the Relative Stock of Gold*

We have found that the analysis of the factors which produce changes in the general price-level, as long as the gold standard comes into consideration, cannot stop at the quantity of gold money, but must be extended to the total gold supply of the world. It is thus necessary to make a general survey of the development of the gold stock of the world. The total gold stock of the world for the year 1850 may be estimated to have been about 10,000 million marks (about £500 millions). If Lexis's<sup>1</sup> estimate of 9,560 million marks for the total gold supply in 1848 is approximately correct, the above figure for 1850 (at the end of the year) may be accepted. According to Lexis, in calculating later increases in the gold stock, a total annual loss of 2 per mille of the actual total stock must be assumed. Account has been taken of the production for the period 1851-75 in five-yearly totals and for the period following in yearly totals (as given by Helfferich and the *Statistical Year-book for the German Reich*). A loss equal to 1 per cent. of the total stock

<sup>1</sup> *Handwörterbuch der Staatswissenschaften* (2nd edition), article on "Gold und Goldwährung."

at the beginning of the period has been assumed for the five-yearly intervals, but after 1875 the yearly gold loss of 2 per mille has been subtracted from the stock at the commencement of the year. In order to maintain a continuous record for the period before 1850, the gold production in ten-yearly totals has been subtracted from the gold stock of 1850, and, in so doing, a loss has been reckoned of 2 per cent. of the stock at the beginning of each period of ten years, in addition to a loss of 2 per cent. of half the production of the period. The figure of 7,535 million marks thus obtained for 1800 is somewhat lower than that of 7,940 million marks given by Lexis, but the difference is of no considerable importance. For 1890, Lexis's estimate is 28,560 million marks, whilst our calculation gives a figure of 28,775 million marks.

The results of our calculation are given in the Appendix, in Table II. ("The Gold Supply of the World"), under the heading "Actual Gold Stock," and are also graphically represented in Fig. 3. In accordance with our method of calculation the figures relate to the gold stock at the end of each year.

We find that the actual gold stock from 1850 till 1910 rose from 10,000 million marks to 52,000 million marks – that is, it has multiplied 5.2 times in 60 years. This rise corresponds to an annual increase of 2.79 per cent., or approximately 2.8 per cent. Thus, if the gold stock had increased annually by 2.8 per cent. from 1850, it would have reached by 1910 the actual level of the gold stock of that year.

If we now proceed to compare the development of the general price-level over a longer period with the corresponding growth of the gold stock of the world, we have to note initially that the general economic development makes room for a certain increase in the stock of gold, and that this increase will not occasion a change in the general price-level. In order to find the effects of changes in the gold stock on the general level of prices, we must first know what increase in the stock of gold was necessitated by the general economic progress in the respective period. It is helpful in this connection if we can so choose the period under review that the general price-level is the same at the beginning and at the end of the period. For

then, clearly, the increase in the stock of gold during the period has occurred without influencing the price-level, and merely corresponds to the increase necessitated by the course of economic progress.

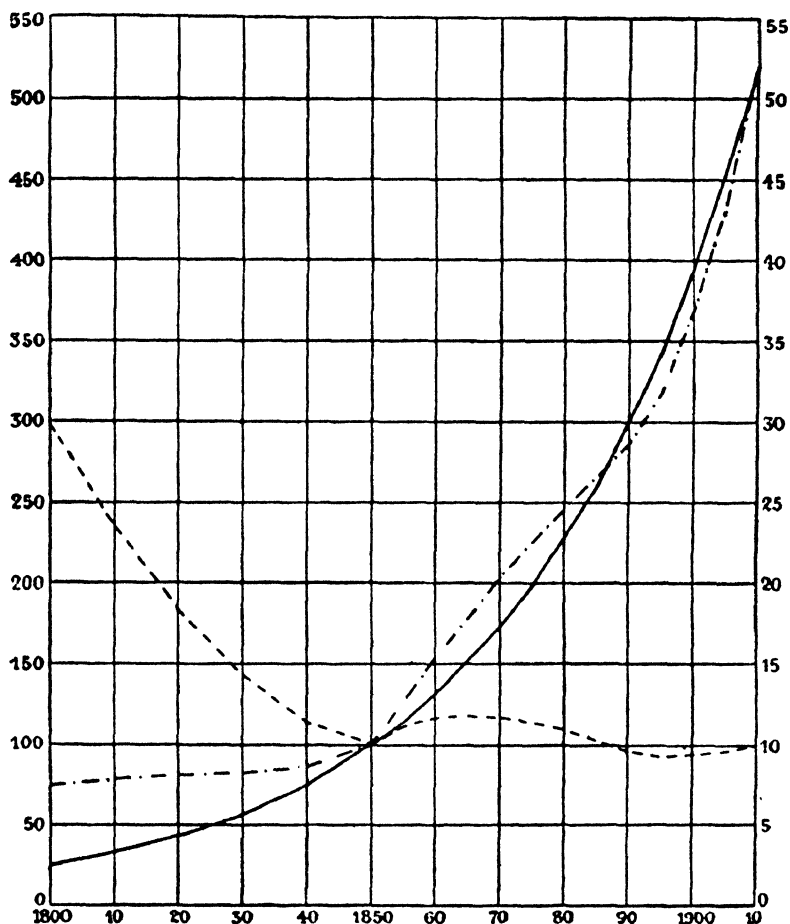


FIG. 3.—WORLD'S ACTUAL GOLD STOCK .....  
 NORMAL GOLD STOCK ———.  
 RELATIVE GOLD STOCK - - - - -.

These conditions, as we have found in the preceding section, have been very fortunately realised in the period from 1850 to 1910. The price-level for 1910 was practically the same as that for

1850. From this we may conclude that the increase in the gold stock from 1850 to 1910 was necessary and sufficient to maintain the price-level the same in 1910 as in 1850, in face of the continual economic expansion. This increase, as we have already found, corresponded to an average annual increase of approximately 2.8 per cent. throughout the whole period. If the gold stock of the world had increased constantly by this 2.8 per cent., then clearly no one would attempt to ascribe any changes in the general price-level to alterations in the gold stock. An absolutely uniform increase in the world's stock of gold would then have taken place, and this increase would have been sufficient to maintain prices at the end of the period at the same level as at the beginning. People would not then be able to say that the increase in the gold stock as a whole had been too great or too small, or that irregularities in the increase had caused changes in the price-level. A uniform increase in the gold stock which, after the elapse of a certain period leaves the price-level unaltered, may be termed a *normal* increase for that period, and the stock of gold at any given moment, assuming a normal increase, may be termed the *normal gold stock* for this period. The normal gold stock for the period 1850-1910 is obtained by starting from the stock of 10,000 million marks at the beginning of the period and reckoning with a uniform annual increase of 2.8 per cent. The figures for the normal gold stock in Table II. of the Appendix are calculated in this way. (The figure for any one year is obtained by multiplying the figure for the preceding year by  $\sqrt[60]{5.2} = 1.0279$ .)

The normal gold stock, thus calculated, for the period 1850-1910 is represented on the diagram (Fig. 3) by the thick line. The calculation is carried back to the year 1800, using the same formula, and the curve on the diagram is correspondingly continued.

From what has been said, it follows that, in so far as changes in the general price-level for the period 1850-1910 may be traced to changes in the gold stock, they refer exclusively to deviations of the actual gold stock from the normal stock. If no such deviations had taken place, then, as already pointed out, there would have been no

occasion to ascribe any changes in the general price-level to fluctuations in the gold stock. It must not be concealed, however, that this problem is to a certain extent one of definition. It can always be said that changes in the general price-level need not occur, at least not on a large scale, if only the gold stock were kept at a suitable level. In this way, it would be possible to lay the blame on the gold stock for every change in the price-level. Such an explanation of the cause would, however, satisfy nobody. When other factors exert an influence on the general price-level, and, in conjunction with the gold stock, determine it, changes in these factors are regarded as independent causes of changes in the price-level, even if their effect may be neutralised by opposite changes in the gold stock. If it is wished to ascribe to each of the various factors a definite share in changes of the price-level, this is possible only by considering a certain development during the period in question as being the normal course of development, so that the general price-level remains unaltered as long as all of the factors remain normal. It is the decision as to what constitutes a normal development that has been described above as a problem of definition. It would be difficult to find a definition of "normal," as applied to the gold stock, which would be more natural than the one given here.

If we are agreed, then, in regarding as normal, in this sense, a rise of 2.8 per cent. per year in the gold stock during the period 1850-1910, we must regard every deviation of the actual gold stock from the normal as *pro tanto* the cause of a change in the general price-level. These deviations of the actual gold stock from the normal are clearly shown on our diagram. From 1850 till 1887 the actual gold stock was greater than the normal stock, whilst from 1887 till 1910 it was smaller. We should therefore expect a rise of the general price-level above the normal level in the first period, and a fall below the normal level in the second period.

In order to be able directly to compare deviations of the actual gold stock with the development of the general price-level, the actual gold stock is expressed as a percentage of the normal stock.



The relation of the actual and the normal gold stock, which we term the *relative gold stock*, is given numerically in Table II. of the Appendix, and is represented on the diagram (Fig. 3) by the line ---. This relative gold stock increases, as may be seen, during the middle of the 'sixties to a maximum of 1.18 – that is, 18 per cent. above the normal level – and falls in the years 1896 and 1897 to a minimum of 0.92, or 8 per cent. below the normal level.

To obtain an approximate idea of the gold supply before 1850, the relative gold stock for the first half of the nineteenth century has also been calculated and put on the diagram. It must, however, be noted that the figures for the earlier period have not the same value as those for the later period, since the normal gold stock is defined only for this later period.

Let us now bring together on one diagram (Fig. 4) the curves of the relative gold stock and of the general price-level. One glance at the diagram suffices to note the general correlation between the price-level and the relative gold stock. It is, however, noticeable that the price-level is subject to variations of two kinds. A distinction must be made between "secular" and "annual" variations in the general price-level. The secular variations correspond on the whole to the simultaneous variations of the relative gold stock, although the secular price-level of the period 1850–80 was clearly somewhat higher, and in 1890 perhaps somewhat lower, than it should have been according to the relative gold stock. Our comparison suffices at any rate to demonstrate that for the period under review (1850–1910) *the chief causes of the secular variations of the general price-level are to be found in changes in the relative gold stock*, and that the quantity theory is correct in so far as the general price-level, although influenced in addition by other factors, is *directly proportional to the relative gold stock*. This very real connection could not be observed so long as, in the comparison of the price-level with the gold supply, one was content to have quite vague criteria as to the abundance or paucity of the gold supply. The problem of the dependence of the general price-level on the gold supply has a definite significance only if the conception of a normal

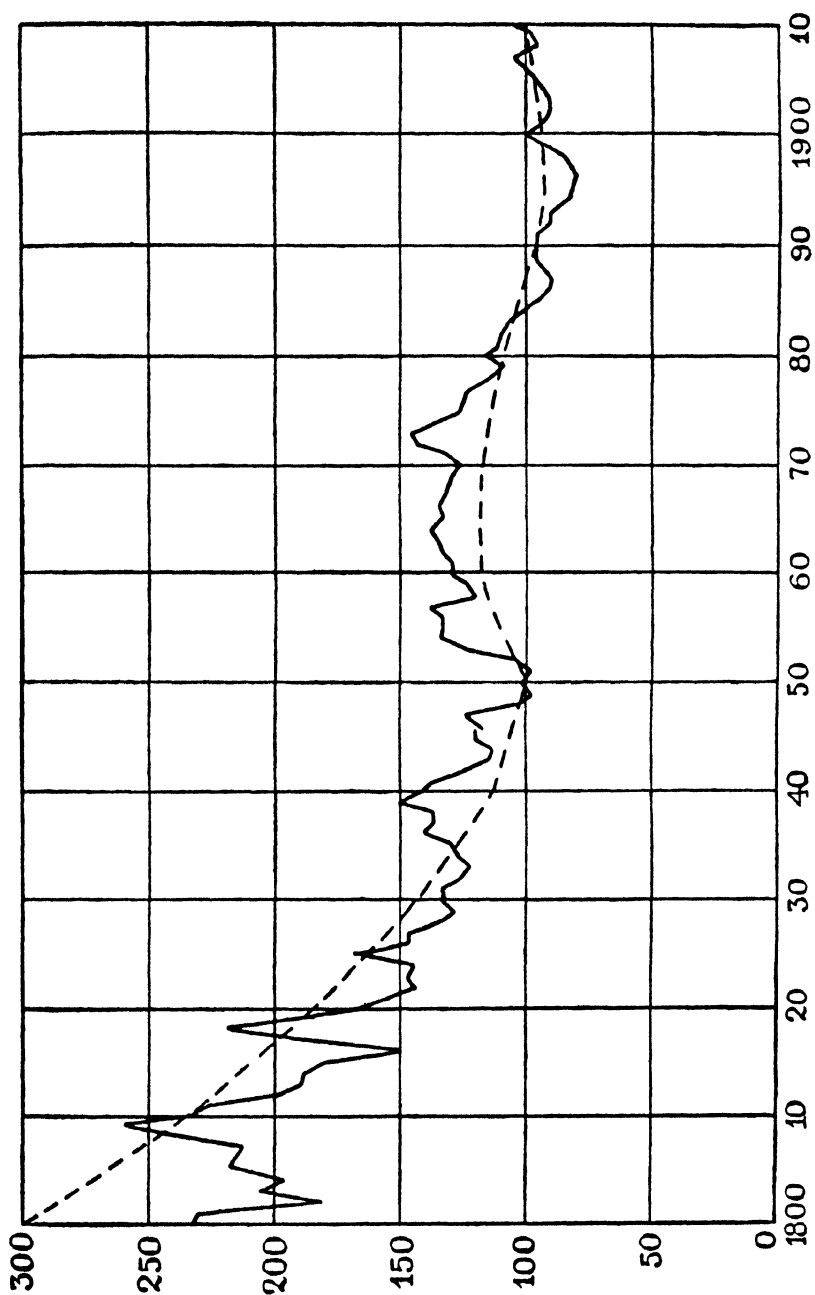


FIG. 4.—GENERAL PRICE-LEVEL AND RELATIVE GOLD STOCK.

gold stock is adopted, but then the problem can be at once solved by a careful investigation of the facts.

The diagram teaches us, further, that the general price-level is subjected also to *yearly variations, which, however, have no connection whatever with the gold supply*. This is a very important result, which forces us to seek the causes of these variations in other factors; this will be done later.

The deviations of the relative gold stock from unity show to what extent deviations of the actual price-level can be attributed to changes in the gold supply. Of the great rise in the price-level during the 'sixties (about 30 per cent.), a rise of 18 per cent. may be attributed to the abundant gold supply. The much-discussed scarcity of gold in the 'eighties and 'nineties is responsible for a fall in the general price-level to 8 per cent. below the normal. From the point of view of the gold supply, the general price-level from 1886-7 was probably at the normal level, as the relative gold stock had a value corresponding to unity. However, this could apply only if the secular variations of the general price-level are considered, to the exclusion of yearly variations. Now, the years 1886 and 1887 occur in a depression period, and, therefore, it is to be expected that the general price-level should be abnormally low; this is borne out by the diagram. A curve representing the secular changes of the general price-level would cut the normal level somewhere about the year 1886. This fact is important in so far as it demonstrates that the gold stock which we have defined as normal is, in the same sense, normal for the periods 1850-86 and 1887-1910. An increase in the gold stock of 2.8 per cent. annually would have left the secular price-level unaltered in both periods. This furnishes a good proof of the trustworthiness of our methods, and of our statistical material.

With reference to the trustworthiness of the material, the following remains to be said. The least reliable of our statistics is, of course, the estimate of 10,000 million marks for the gold stock in 1850. If we suppose an error of 5 per cent. in this estimate, so that the actual gold stock was 10,500 million marks, instead of 10,000 million, this would mean that the normal increase of the gold stock

was 2.72 per cent. instead of 2.79 per cent., which is only slightly different. If we assume the figure of 10,000 million marks for 1850 to be correct, an error of 1,000 million marks in the estimate of the gold stock for 1910 results in an error of only 0.03 per cent. in the increase factor of the normal gold stock (that is 2.82 instead of 2.79 per cent.). If we assume the curve of the normal gold stock to be correct, an error of 100 million marks in the estimation of the actual gold stock towards the end of the period would cause an error in the relative gold stock of 2 per mille, and so would have no significance whatever. We may assume, accordingly, that the figure of 2.8 per cent. represents fairly exactly the true increase of the normal gold stock for the period 1850-1910, and that the curve of the relative gold stock gives, broadly speaking, a true picture of the development of the gold supply.

For the period before 1850 the curve representing the relative gold stock is of value only in so far as it shows the general direction of development. This suffices to make apparent the sharp bend which the curve describes in 1850, and which is accompanied by a remarkably similar bend in the secular trend of the general price-level curve. In all probability general economic progress was considerably slower during the first half of the nineteenth century than during the latter half, but nevertheless the growth in the stock of gold from 1800 to 1850 was quite insufficient for the progress that took place, and the general level of prices was bound to fall. A curve representing this fall would be less precipitate than the curve of the relative gold stock of our diagram, but would leave practically the same impression of the general development of the gold supply during the nineteenth century.

Even if our figures are uncertain within fairly wide limits, it seems far better to give, by correct treatment of the available materials, a quantitative statement of the true position of the gold supply than to create vague impressions, which various text-books, according to their point of view, try to strengthen by using a large number of favourable adjectives.

In order that the general price-level shall remain constant, it is necessary that the gold stock should increase at a fixed yearly rate

of 2.8 per cent. It is, however, quite immaterial how large the gold stock is at the initial moment. If, for the moment, it is above the normal, and if the price-level is thus correspondingly above the normal level, an annual increase of 2.8 per cent. will maintain general prices at a constant level, but a slower growth in the gold stock will gradually lower the price-level. Conversely, a growth of somewhat more than 2.8 per cent. in the gold stock will suffice gradually to raise a price-level that is too low.

As the yearly loss of gold may be estimated at 0.2 per cent. of the gold stock, an annual gold production amounting to 3 per cent. of the gold stock at any time is the condition for keeping the general price-level constant, in so far as it depends on the gold supply. Thus we have secured a firm basis on which to estimate the sufficiency of the gold production, a question which people have been chiefly content to discuss in vague and general terms, the gold output being described as "too small," or "huge," "enormous," etc.

As long as the world demand for gold at a constant price-level increases 2.8 per cent. per annum, the stability of the price-level requires that the annual production of gold should amount to 3 per cent. of the increasing gold stock, and thus itself grow by 2.8 per cent. annually. This means that, if the supply of gold equals the demand at a particular moment, a production which is maintained at a constant level will gradually become insufficient. This fact, that the gold output must steadily increase, is very important in connection with the question of the future gold supply. Unless, *pari passu* with economic progress, unexpected possibilities of increasing gold output arise, the world will inevitably be faced with a scarcity of gold which will make the maintenance of a given price-level a most difficult task.

If a gold production amounting to 3 per cent. of the existing stock of gold is necessary to maintain the price-level unaltered, this means that the actual gold stock must be thirty-three times as large as the annual gold output. Writers on the subject generally state that the price-level, under a gold standard, is maintained fairly stable because, through the centuries, the total stock of gold has risen to an enormous amount in comparison with annual

output, or, in other words, the annual output is insignificant in relation to the accumulated stock of gold. Such statements are as superficial as they are misleading. In reality, as we now know, stabilisation of the general price-level by no means requires the gold stock to be "enormous," in relation to the annual production, but simply that it should be thirty-three times as large, neither more nor less.

The great changes that occurred in the sphere of money during the war, and more especially after it, have completely interrupted the continuity in the development of the world demand for gold. As a result of the competition of paper money issued with little or no gold backing, and particularly as a result of the withdrawal of gold coins from circulation, there arose a superfluity of gold, which raised the price-level, after the resumption of the gold standard, by roughly 50 per cent. as compared with the pre-war level. (This figure is based on the average price-level of the United States for the period 1927-8.) As a matter of fact, the superfluity of gold was so great that an even greater rise of prices would have taken place if the United States had not kept a part of the surplus gold as a reserve for the future, the Federal Reserve System allowing its gold stocks to reach the abnormally high level of 70-80 per cent. of the notes and deposits outstanding.

The stability of the general price-level, assuming no new alteration in the relative demand for gold, requires an annual gold production which allows the world's total stock of gold to increase at the same rate as economic progress in general. If the future rate of progress is to be as rapid as that in the period 1850-1910, the present gold output is decidedly too small. The world production of gold, after reaching its maximum in 1915, fell rapidly, and at present amounts to hardly more than 2 per cent. of the total stock (see table below). In fact, for more than ten years we have lived in a period of insufficient gold production. The maintenance of a stable price-level, in such circumstances, is the most important economic task which the world has to face to-day. We shall return to this question in § 58.

## THE WORLD GOLD SUPPLY SINCE 1910

|      | <i>Annual Output<br/>of Gold.<br/>(Million Marks.)</i> | <i>Actual Gold Stock<br/>at end of year.<br/>(Million Marks.)</i> | <i>Production as per-<br/>centage of the gold stock<br/>at the beginning<br/>of the year.</i> |
|------|--|---|---|
| 1910 | 1,912  | 52,004  | 3.81  |
| 1911 | 1,935  | 53,834  | 3.72  |
| 1912 | 1,953  | 55,679  | 3.63  |
| 1913 | 1,927  | 57,495  | 3.46  |
| 1914 | 1,839  | 59,219  | 3.20  |
| 1915 | 1,971  | 61,072  | 3.33  |
| 1916 | 1,903  | 62,853  | 3.12  |
| 1917 | 1,757  | 64,484  | 2.72  |
| 1918 | 1,607  | 65,962  | 2.49  |
| 1919 | 1,532  | 67,362  | 2.33  |
| 1920 | 1,403  | 68,630  | 2.09  |
| 1921 | 1,383  | 69,876  | 2.02  |
| 1922 | 1,337  | 71,073  | 1.91  |
| 1923 | 1,541  | 72,472  | 2.17  |
| 1924 | 1,630  | 73,957  | 2.25  |
| 1925 | 1,655 <sup>1</sup>                                     | 75,464  | 2.24  |
| 1926 | 1,675  | 76,988  | 2.22  |
| 1927 | 1,687  | 78,521  | 2.19  |
| 1928 | 1,705  | 80,069  | 2.17  |
| 1929 | 1,705  | 81,614  | 2.11  |
| 1930 | 1,700  | 83,151  | 2.08  |

§ 54 *The Price-level and the Cost of Production of Gold*

It was natural for the classical economists, who assigned to cost of production a key position in their system of value, to attempt to base the value of money also on the costs of production of the precious metals. According to Adam Smith, the value relationship between these metals and other commodities depends on the relation between the amount of labour necessary to bring a certain quantity of gold and silver on the market, and the amount necessary to bring a quantity of other commodities on the market.<sup>1</sup> Ricardo followed the same line of thought when he stated, in accordance with his general theory of value, that the value of the precious metals was

<sup>1</sup> Production figures from 1925 onwards, according to Kitchin. Those for 1929-30 are estimates.

<sup>2</sup> *Wealth of Nations*, Book I., chap v., and Book II., chap. ii.

proportionate to the amount of labour required to produce them.<sup>1</sup> Mill brought it into line with his quantity theory, by asserting that the quantity of gold indeed governed the actual market price of gold, but that the normal price must in the long run be determined by the cost of production of gold.<sup>2</sup>

This theory of the value of money, which states that under a gold standard the general price-level is determined by the cost of production of gold, and which is so often regarded as a self-evident and definitive solution of the problem, suffers from the same errors as the general cost of production theory. In practice, there are generally no fixed costs of production. If we take the theoretical case where gold can be produced only at a certain fixed cost price, there is no reason why this price should not be lower than the market price, if the opportunities for production are sufficiently restricted. In this event, the producer would, as monopolist, make a profit containing certain rent elements. On the other hand, it would be quite possible for the costs of production to exceed the market price, in which case obviously no gold would be produced. In practice, there is a whole series of gold-mines with varying costs of production, and this series may practically be regarded as continuous. If, because of this, it is wished to replace the conception of costs of production by the conception of "marginal costs of production," then it must again be remembered that these cannot be held as factors determining the price, since the extension of production, and therefore the marginal costs of production, themselves depend equally on the price. Nevertheless, there is clearly a certain connection between the possibilities of producing gold and the general price-level. If the general price-level rises, the costs of production of gold, reckoned in money, rise also, whilst the nominal price of gold remains unaltered. The result is a shrinking in the possibilities of profitable production, and therefore also in the total production; thus the supply of gold becomes less, and a further rise in the general price-level is prevented.

How, now, can the effect of the costs of production be linked up with the available supply of gold, and how is the general price-level

<sup>1</sup> *Works*, ed. McCulloch, p. 213.

<sup>2</sup> *Principles of Political Economy*, chap. ix., § 3.



determined by the combined effect of these two factors? This question is most easily answered, if, in accordance with our general theory of pricing, we regard the price-level as an unknown in the equation which states that the demand for gold must equal the available supply of it. If the available supply of gold is known, then the price-level is known also. If, on the other hand, the supply of gold is increased by production, then the conditions of production exert a certain influence on the price-level, which through our equation is given its correct connection with the influence of supply and demand. Assuming the general price-level to be given, the demand for gold as well as the extent of production, and thereby the gold supply, is determined. In equilibrium the supply must equal the demand – that is, the supply of gold must increase at the same rate as its demand, assuming an unchanged price-level, and it is through these conditions that the general price-level is determined.

We are now in the position to relate exactly the influence of the conditions of production on the price-level and to ascertain numerically the conditions prevailing before the war. If the possibilities of production are such that at the existing price-level the production of gold corresponds to 3 per cent. of the available stock of gold, there is equilibrium, and the price-level, in so far as it depends on the gold supply, remains constant. If, however, the possibilities of gold production are so abundant that at the prevailing price-level the production exceeds 3 per cent. of the stock of gold, the general price-level rises by a percentage corresponding to the excess by which the relation of the annual gold production to the stock of gold exceeds 3 per cent. Conversely, the general price-level falls if the possibilities of production at the prevailing price-level do not permit of a gold production amounting to 3 per cent. of the stock of gold.

The influence of the gold production upon the general price-level thus depends on the *quantity of gold which can be produced at the prevailing price-level*, not on the “cost of production,” which is an entirely vague concept.

The quantity of gold which can be produced at the prevailing price-level is naturally dependent on the price-level, rising when the

latter falls, and conversely. As an increase in the production of gold tends to produce a rise in the general price-level, and conversely, the production of gold serves to a certain extent as a regulator of the general price-level. This regulator is naturally the more effective, the more the production of gold is dependent on the general price-level. For the practical consideration of this problem it is necessary to note that the price-level in the gold-producing countries may deviate greatly from the world price-level. In the most important producing country – South Africa – the price index for 1926 was only 123, whilst the world price-level was somewhere in the region of 150. According to this point of view, the South African production should have been not nearly as restricted as the high level of world prices would have led us to suppose. On the other hand, it must be noted also that the cost of production of gold may be strongly influenced by factors other than the wholesale price-level of the country in question. Such factors, are, in South Africa, particularly the restricted influx of black labour, high taxes, as well as rising expenditure for social purposes. In addition, there is the progressive exhaustion of the mines and the necessity of working at great depths, and this naturally makes production more expensive.

### § 55 *The Price-level and Bank Money*

As we have determined, in the last section but one, the effect of the relative gold stock on the general price-level, it is useful, in the further analysis of the factors which determined the general price-level, to picture to ourselves how the curve of the price-level would have looked if a deviation of the actual gold stock from the normal had not taken place during the period in question – if, that is to say, the relative gold stock had remained equal to one during the whole period. We obtain an idea of this in the following diagram (Fig. 5), in which the Sauerbeck index numbers are divided by the relative gold stock and represented by the thick line. The thin line represents the general price-level according to Sauerbeck (for the relevant figures see Table I. in the Appendix).

The price-level so reduced is, as one can see, much smoother in its secular movements than the price-level itself. The annual fluctuations remain, however, and it will be our task to find an explanation for them. Every-one who is familiar with the history of general economic conditions in the period in question will see at once that these annual fluctuations are connected with the cyclical movements of trade. In order that this connection may be clearly seen in the diagram, the years in which a boom period has reached its height are distinguished by a thick line. A glance at the diagram shows that the peaks of our curves coincide regularly with the peaks of the booms. An exception to this is found only in 1882, when the conditions of good trade were not very marked. It is also

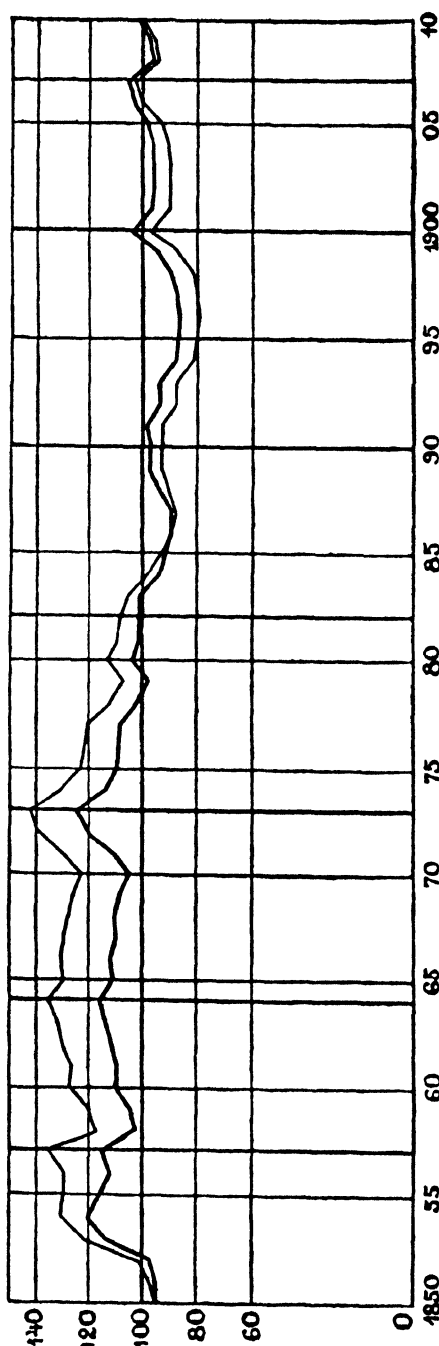


FIG. 5.—THE PRICE-LEVEL REDUCED TO THE NORMAL GOLD STOCK.

clear that there exists a definite correlation between the various phases of the trade cycle and the annual fluctuations of the price-level. Why a period of very good trade should lead to a rise in prices, and a period of trade depression to a fall in prices, are questions which we shall reserve for the next Book, in which we shall deal especially with the trade cycle (§ 70). For a closer study of the times of trade booms in the past we must refer to the same Book (§ 62).

It has long been a very disputed question whether non-monetary factors, also, exert an influence on the price-level. It was always brought up against the monetary theories of the value of money which we have set out, that other real economic conditions may influence the price-level. Thus, for example, a lowering of the costs of production through the introduction of labour-saving machines, a general reduction of transport costs through the extension of railways, the development of the modern great steamship lines, the competition of new producing countries, cheaper labour – all these, and any other elements which make for cheapness, would, in the opinion of the critics, lower the price-level. On the other hand, wage-increases engineered by workers' associations, modern social and tariff policy, etc., would, they said, raise the general price-level. Such explanations do not merit being called theories of the value of money. They overlook completely the fact that the value of money cannot be determined without the co-operation of the decisive factors on the side of money. A change in the general price-level always presupposes a corresponding change in the total payments made, and therefore, in any case, changes in the supply of money or in the use of the existing means of payment. If the co-operation of the monetary factors breaks down, if the monetary factors show independent and perhaps antagonistic changes, the ultimate effect on the general price-level must be different.

It must always be the primary aim of a theory of the value of money to establish the changes of the monetary factors and to make clear the connection between these changes and the simultaneous changes of the general price-level. We have already done this in regard to the secular changes, when we showed the effect of the gold supply on the general price-level. Before we proceed further with

this analysis, we have to inquire into the annual fluctuations of the general price-level and to examine how far they are due to monetary or other economic factors. We then come across the striking fact that the various phases of the trade cycle exert a decisive influence on these annual fluctuations. This, however, by no means completes the explanation of these annual fluctuations. Still another problem comes to the fore, a problem which may be formulated thus: In periods of very good trade the turnover is greatly increased, and, therefore, also the demand for money; the immediate result should be a *fall in prices*. If, nevertheless, there occurs a *rise in prices*, how will the demand for money, increased as it is from two causes, be met? If the increased demand for money is not satisfied, then those causes which originate in other factors cannot produce a rise of prices.

The general answer to this question can only be that the existing supply of gold in times of brisk trade is used to a greater degree for purposes of payment. This can happen in various ways. The velocity of circulation of gold coins can be increased. The volume of gold coins can be increased at the expense of the bank reserves, as can the total monetary gold supply at the expense of the non-monetary supply. Above all, bank money may be created on a large scale and used more intensively. All such changes are equivalent to an increase in the payments effected by the existing gold supply. If we call the payments effected per unit of the existing gold stock the "relative payment effectiveness," we may lay down the proposition that annual fluctuations in the general price-level are due to changes in the relative payment effectiveness.

When we examined the effect of the gold supply upon the general price-level, it was natural to compare the existing supply of gold with the demand for it (§ 50). Now, when we have to determine how changes in payment effectiveness affect the general price-level, we must compare this payment effectiveness in relation to a certain unit period with the extent of the payments to be effected in that period. The aggregate of these payments equals the product  $PT$ , where  $T$  represents the volume of the real turnover, and  $P$  the general price-level.

We do not possess any reliable statistics relating to changes in the real turnover. We know, however, that the real turnover rises in periods of brisk trade, and at a more rapid rate than usual. From this we may conclude that the total payments effected in periods of brisk trade must show a bigger increase than the general price-level. In those cases where the maxima of the price-index and of the real turnover exactly coincide in point of time, the increase in the total volume of payments effected must be particularly clear.

In order to be able to test these conclusions we require some measure of the changes in the total volume of payments effected. In the present state of statistical science we must not press our claim for such a measure too far. However, we have in the clearing house figures for the United States and England an index of changes in the total volume of payments which will suit our purpose.

The clearing figures may, on the whole, be regarded as a measure of payments by cheque, and in the countries named these payments form by far the greater part of all payments. As the other payments generally have to follow the movements of the payments by cheque during the various phases of the trade cycle, these cheque payments may, without risk of appreciable error, be used as an index of the total payments in the countries in question. This, of course, is only permissible in regard to short period variations of the volume of payments, or when we study the movements of the volume of payments in connection with the phases of the trade cycle.

To obtain an index of total clearing transactions capable of being directly compared with the curve of the reduced price-level, we may divide the clearing figures by the actual gold stock for each year. We thereby eliminate the influence of secular movements of the general price-level upon the clearing figures, in so far as these movements depend on the relative gold stock. At the same time, as we shall see directly, the increase in the clearing figures throughout the whole period is eliminated, so that the annual variations of the clearing curve may be directly compared with the corresponding variations of the general price-level. To achieve this, all that is necessary is that the clearing figures be given as percentages of a

certain normal level. Accordingly, the London clearing figures for the period 1870 to 1910 are first divided by the actual gold stock of each year; then the results are expressed in percentages of the

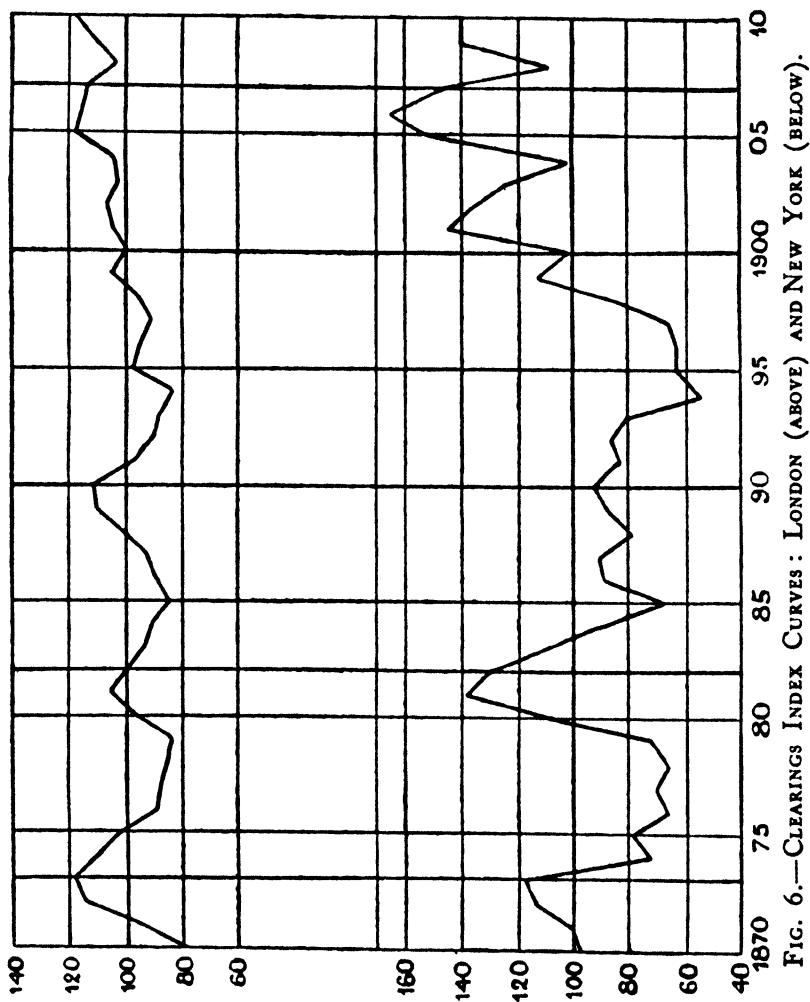


FIG. 6.—CLEARINGS INDEX CURVES: LONDON (ABOVE) AND NEW YORK (BELOW).

average for the whole period. The New York clearing figures are treated in the same way.<sup>1</sup> The results are given in the diagram (Fig. 6). (For the figures, refer to Appendix, Table III.)

<sup>1</sup> *Statistical Abstract of the United States*, 1910, p. 570.

For short periods these curves may be regarded as indices of the volume of payments of the countries concerned. The two index curves show, on the whole, similar movements, although the American curve, corresponding to the far greater industrial fluctuations of that country, generally shows more violent variations.

If we now examine more closely, say, the English index of payments, we find that the increases always coincide with periods of brisk trade, although its peaks occur sometimes rather earlier than those of the trade booms. On the whole, the index of payments shows considerably greater variations than the reduced price-level. Wherever the highest point of the payments index coincides with the peak of the boom and also with the maximum of the price-level, as in 1873 and 1890, the rise in the index is particularly pronounced. The index of payments shows, therefore, the very movements that our theoretical considerations would lead us to expect.

After this study there can be no doubt that the occasional rises in the price-level, which we have here considered, are made possible by a rise in the payment effectiveness per unit of the available gold supply, and that this increased payment effectiveness is for the greater part caused by the increase in bank money and its more intensive use, also by the release of gold coins from the reserves of the banks, and perhaps by increased velocity of circulation of the circulating coins. Thus sympathetic action by the banks results in the supply of money to trade during a boom period being increased not only in the same proportion as the real turnover, but even more, and this leads to a general rise in prices. In the succeeding depression, the fall in prices is determined by a corresponding restriction of the supply of media of payment on the part of the banks. Even if all these "annual" fluctuations of the general price-level are influenced also by other factors inherent in the trade cycle, they are possible only on the assumption of a corresponding supply of means of payment provided by the banks, and must therefore be ascribed first of all to the policy pursued by the banks.

The line of study pursued in these sections has produced certain other results also. A glance at the diagram shows that the English curve as a whole – if we neglect the influence of the trade cycle –



is almost perfectly horizontal, so that the volume of the payments effected in London during the period in question increased, on the average, at the same rate as, or perhaps a little faster than, the gold supply of the world. The synchronous development of the total volume of payments of the country was probably about the same. We must, perhaps, assume that the circulation of other media of payment grew somewhat more slowly, but, as cheque payments undoubtedly predominated throughout the whole period, this fact could not have had much influence on the development of the total volume of payments.

However, we are now in a position to obtain an approximate idea of the average increase in the real turnover in England, and thereby of the rate of the total economic development of the country during the period in question. For this it is necessary only to reduce the established rise in the volume of payments to a constant price-level, which may easily be done, as we know that the secular price-level at the beginning of the period stood roughly at 30 per cent. above our normal level (§ 53), but, at the end of the period, coincided with the normal level. According to these principles, the average rise in the real turnover of England during the period 1870-1910 works out at 3.05 per cent. The increase in the absolute gold supply is therefore taken as the basis. Taking into account that the rise in the payment effectiveness was somewhat greater, we arrived at a figure which is, perhaps, one- or two-tenths of one per cent. higher. This figure agrees very well with our general estimate of the rate of economic progress in the Western world (§ 6).

The development in the United States was unquestionably much more rapid, but, on account of the changing monetary conditions, can hardly be numerically evaluated in the same way. On the other hand, certain other countries developed much more slowly. We may perhaps be justified in regarding the development of England in the period under review as an approximate average for the whole world (cf. recent investigation of the New York Federal Reserve Bank, *Monthly Review*, 1931).

### § 56 *The Price-level and the Demand for Gold*

As it is now settled that the annual fluctuations of the general price-level are explained by the trade cycles and by the elasticity which the banks give to the supply of means of payment, we may confine our attention to the secular variations of the general price-level. The general agreement between these variations and the corresponding variations of the relative gold stock, which we established in § 53, is at first sight to be regarded as a mere fact. If, however, in accordance with the general quantity theory as developed in § 50 and in accordance with our analysis of the effects attributable to the gold supply, we assume that changes in the relative gold stock result in proportionately similar changes in world prices, expressed in gold, then the secular movements of the general price-level are substantially explained.

It is remarkable that in this way all changes of the general price-level may be traced to causes which, in so far as they are of a monetary nature, belong to the sphere of the monetary supply, in this case particularly the gold supply. Have, then, the great changes in the demand for gold during the period exerted no effect at all on the general price-level? We have based our study on English prices, because they are the prices of world commerce, and because England throughout the period was on a gold standard. We have compared the price-level so calculated with the gold supply of the whole world, because of the circumstance that a gold supply less broadly conceived would not have furnished an objectively given magnitude in the problem. It may now be asked: Did not the greatly increased world demand for gold during the whole period exert such a strong influence on prices, that the connection between the general price-level and the world gold supply was completely obscured? During the period in question, all the civilised countries, one after the other, went over to the gold standard, and therefore new claims on the gold supply of the world were continually being made. Have not these claims then, left strong traces on the curve of the general price-level? It is natural for such questions to be asked, but our inquiry has shown that, in the main, they are to be

answered in the negative. After we have examined the effects of variations in the relative gold stock and in the fluctuating supply of bank money to trade, there remains to explain only a relatively unimportant secular variation in the general price-level.

The world demand for gold, during the period 1850-1910, reduced to the normal price-level, must have increased fairly uniformly at the same rate as the normal gold supply - that is, at the rate of 2.8 per cent. per annum. This figure is somewhat lower than that which we found to be characteristic of the general economic development of the world for the period 1870-1910. It is also not improbable that the development of bank money had the effect of causing the demand for gold to rise somewhat more slowly than the real turnover.

The somewhat peculiar fact of the uniform increase of the demand for gold can be explained if it is noted that a country's transition to the gold standard results in by no means so great an increase in the demand for gold as one would, perhaps, be inclined to expect. Frequently, gold was already extensively circulating in the country, either because of a double standard or as trade coins, or it had been accumulated for years in large reserves, either by the State or the central banks. In other cases, either the full gold standard was not at first introduced, or an effective gold circulation was dispensed with. Under such circumstances the demand for gold resulting from a change of standard may be spread over a fairly long period. So late as in the years immediately preceding the war the Bank of France was gradually improving the relation between the gold and silver in its vaults, and, to this end, was buying gold. Nevertheless, a transition to the gold standard means to a certain extent an abnormal increase in a country's demand for gold, but this need not exert an appreciable effect, if only other countries in the meantime reduce their demand for gold to a corresponding extent. For the individual countries, the demand for gold has certainly not increased so uniformly as for the world as a whole. A country may, for a time, be content with a relatively small increase in its gold, if payments effected with bank money are proportionately increased. These circumstances show how hopeless it must be

to trace changes in the general price-level to changes in the gold supply of a particular country. The demand for gold of a particular country, which is determined by monetary and bank policy and similar factors, is certainly a component factor in the determination of the value of gold on the world market, but only the total world demand determines, in conjunction with the total supply, the value of money – that is, the general price-level.

It is natural to suppose that periods of exceptionally abundant gold production have especially accelerated the transition to the gold standard and gold circulation, and that on this account room was made for the new gold. In the period under review, however, this has not been the case. The demand for gold showed none of the elasticity which would have partly prevented a rise in prices. On the contrary, in both periods of exceptionally large gold production – the Californian-Australian period from 1850 on and the Transvaal period from the middle of the 'nineties – the rise of prices was, as the diagram (Fig. 4) shows, distinctly greater than the rise in the relative gold stock would have led one to expect. Even if our statistical material contained relatively large errors, this result, as can easily be seen, would remain. The whole of the extraordinary increase in the gold production has been absorbed in both cases by the rise in prices. The demand for gold during this period increased at the most by its normal percentage of 2.8, rather less if anything. Precisely because the abnormally increased gold production could not be absorbed by the demand at an unaltered price-level, prices had to rise.

The fact that the secular price-level in the 'fifties and 'sixties was above and in the 'nineties below the relative gold stock, suggests, however, that certain secular variations occurred in the generally uniform development of the demand for gold. The situation cannot very well be explained otherwise than by a somewhat less than normal increase in the demand for gold previous to 1870, and a somewhat more than normal increase after 1871. Such an assumption appears very natural in view of the great changes in the sphere of monetary policy which characterised the 'seventies. People, and especially bimetallists, have been inclined to ascribe to this demand

for money a somewhat exaggerated share in the determination of prices. Probably the transition to the gold standard, which certain European countries made during the 'seventies, was carried out so gradually that in itself it was not able to exert much influence on the general price-level. The later transition of Russia and Austria-Hungary to the gold standard left, as we have already remarked, no recognisable trace of pressure on the price-level.

Even if the European currency reforms of the 'seventies may have had a certain small share in the resulting fall of the general price-level, probably another circumstance must be held primarily responsible for this fall, in so far as it was not caused by the simultaneous fall in the relative gold stock. This circumstance is the enormous increase in the demand for gold in the United States at the end of the 'seventies and at the beginning of the 'eighties, which was caused by preparation for, and the carrying into effect of, the resumption of cash payments. The paper currency of the Civil War was declared convertible from 1879 onward. In the period from the middle of 1875 till the end of 1887, the monetary gold stock of the United States grew from 89 million dollars to 650 million, which is more than a seven-fold increase in  $12\frac{1}{2}$  years. The increase was particularly marked from the middle of 1876 till the end of 1881, namely, from 99 to 485 million dollars – that is, nearly five-fold in  $5\frac{1}{2}$  years. These demands were made at a time when the world supply of gold was already so scanty that it was bound to lead to a considerable reduction in the general price-level. The sum of 386 million dollars, which the United States acquired in this period of  $5\frac{1}{2}$  years for its monetary gold supply, amounted to no less than 64 per cent. of the world's gold production at that time. As under normal conditions the remainder of the gold production would be required for non-monetary purposes, there was nothing left to satisfy the monetary demand of the rest of the world. Clearly, there must have taken place a rise in the value of gold considerably above that warranted by the small output of gold alone. A doubling of the monetary demand for gold in 12 years may perhaps be regarded as normal for the United States, in view of the rapidity of its economic development. But, in addition to this, the United States in the period

1875-87, acquired approximately 2,000 million marks (nearly £100 million) for monetary purposes. The fall in the price-level caused thereby may be estimated at roughly 7 per cent.<sup>1</sup>

Another factor acting in the same way, though to a less extent, on the side of demand, was the greatly increased gold import of India in the first half of the 'eighties. The effect of this demand in lowering prices may perhaps be estimated at 2 per cent.<sup>1</sup>

These irregularities in the development of the demand for gold are quite sufficient to explain the fall of the general price-level from the 'seventies to the middle of the 'nineties, apart from the fall caused by the reduction in the relative gold stock. *The secular variations of the general price-level are in the main to be ascribed to the fluctuations of the relative gold stock and for the rest to certain irregularities in the otherwise practically uniform rise in the demand for gold.* This completes our analysis of the causes of the secular variations of the general price-level.

All the factors used in this explanation belong, as may be seen, to the monetary side of the problem. They are based on the conditions of gold production or on monetary policy, and therefore may be primarily regarded as independent factors determining the value of money. There is, therefore, no room for an explanation of the secular variations in the value of money in the period in question in terms of other causes of a general economic nature. In the period under review the secular movement of the general price-level was exclusively a monetary phenomenon.

Under the influence of the trade cycles, general economic progress naturally exhibits fluctuations; the rate of progress must, in the upward swing of the trade cycle, be greater than normal. Such an increase in the rate of development should of itself cause a fall of the price-level. But the supply of the media of payment by the banks in such periods is so abundant that, even though trade increases, it is sufficient for the needs of a higher price-level, and thus prices are pressed up.

Hence the rapidity of the general economic development in the

<sup>1</sup> For the statistical data which are the basis of the calculations see the *Report of the Director of the Mint* (Washington, 1911), pp. 21, 43, and 37.

period in question did not affect the general price-level in either its secular or annual variations.

It must be especially noted that a general cheapening of commodities, which one is so often inclined to expect from a great increase in the productivity of human labour, has not taken place. The provision of the world with means of payment has been sufficient to counteract the tendency.

### § 57 *The Regulation of the Price-level by the Bank-rate*

We have established the fact that, given a gold standard, secular variations of the general price-level are determined by the varying scarcity of the supply of gold in relation to the demand. The question, how the gold supply is able to exert such an influence on the general price-level, is not yet answered. The new gold, as a rule, passes from the areas of production to the great trade centres, particularly to the London market, whence it is distributed all over the world. In so far as it is not acquired by industry or the Oriental markets, it is at first generally purchased by the big central banks and the treasuries of the various States. There, perhaps, it will remain for some time without exerting any direct influence on the price-level.

Now, we know (Chapter X.) that in a country on the gold standard the volume of all the means of payment at the disposal of trade always bears a certain, though also very elastic, proportion to the gold reserves of the banks. As fairly great fluctuations may take place in this proportion, an increase of the gold reserve need not necessarily exert a direct effect on the general price-level. But there is no obvious reason why an increase of the gold supplies should cause a permanent alteration in the average proportion between means of payment and bank reserves. Rather, it is to be expected that the more abundant gold supply will gradually bring about a corresponding extension of the supply of money to trade. We shall, therefore, find it quite natural that the gold supply completely controls the secular variations of the curve of the general price-level.

As the gold supply influences the secular variations of the general price-level only through the policy of the banks, and the annual variations of the price-level, in so far as they depend at all on monetary factors, are likewise determined by bank policy, it is found that at any given moment banking policy alone, on the monetary side, is directly responsible for changes in the general price-level. Now, in this bank policy – that is, in their regulation of the total supply of means of payment – the bank-rate appears as a factor of such prime importance, that it may be regarded as being representative of the whole policy of the banks.

The bank-rate, of course, is not arbitrarily fixed, but is regulated with a definite end in view. As we have seen, in a gold standard country the bank-rate must always be so fixed that the demands of domestic trade on the banks' reserves (indicating an increased demand for money) are only temporary, and, on the whole, leave the reserves untouched. Only by means of such a bank policy is it at all possible to maintain the gold standard. Further, the bank-rate has to be regulated so that the reserves are protected against too great a demand for payments abroad – that is, against an occasional unfavourable situation of the foreign balance of payments. In both cases, the endeavour to maintain the currency at par with gold is the decisive factor in the regulation of the bank-rate.

Experience shows that this can be done if the correct rate policy is pursued, but the rate policy alone is not enough for this purpose. For the maintenance of the gold parity of a currency, there must be, in addition, a supply of means of payment according to the actual needs of trade. This involves the use of elastic bank money to take the place of gold, as otherwise the demand for gold might become too great if there is a pressing need for means of payment. But even gold itself must, to a certain small extent, be released from the reserves, since no effective demand for gold may be left unsatisfied. One might be inclined to say that this constant convertibility of bank money is the only necessary condition for a gold parity. Convertibility, however, is possible only on the assumption, on the one hand, of a rate policy which keeps the demand for money within certain limits, and, on the other hand, of the satisfaction of



this demand by means of bank money in so far as these will be accepted in lieu of gold. By helping out the gold circulation with bank money, and by the release of gold or foreign bills from the reserves of the bank, the demands of commerce for gold are reduced and the supply is increased. In periods of pressing demand for money, this acts as a preventive against a rise in the value of gold.

By this means, it is actually possible to maintain the value of money in a country at the same level as that of a certain metal, or more exactly, to fix, within certain narrow limits, the price of a certain metal expressed in the currency of the country. This fixing of the price of a metal, namely, gold, has been represented (§ 41) as the central feature of a gold standard. This factor distinguishes the gold standard from a free standard. Even on a gold standard, the currency (such as the pound sterling) has its independent existence. It is bound to the metal, gold, only by the fact that the price of gold is fixed within certain limits. The regulation of the currency is carried out by the bank-rate and the utilisation of the bank reserves, with this condition as their object.

The gold standard may thus be regarded as a free standard under which the price of gold is determined within certain limits. The fixing of the price of gold is effected during secular periods by the regulation of the price-level according to the gold supply, but for short periods by regulating the gold market according to the general price-level.

It may now be asked to what extent the general price-level is controlled by a rate policy which has as its object the maintenance of the gold parity. The answer is supplied by our inquiries above: the rate policy has been able to regulate the general price-level in its secular variations according to the world's gold supply, and consequently in agreement with a certain price-level which is determined exclusively by this gold supply in accordance with the quantity theory. On the other hand, the rate policy of the banks has not prevented "annual" variations in the general price-level.

A bank policy which aims at maintaining the gold parity of a currency – that is, at maintaining a constant price for gold – will

produce a price-level having its secular variations in inverse proportion to the value of gold, and having, besides, yearly variations which are to a certain extent independent. It would hardly be presuming too much to infer from this that a bank policy, which aims at the fixing of any other price, could produce the same result. As an object of bank policy there should be considered above all the fixing of the average, calculated in a definite manner, of a certain group of commodity prices, or, what comes to the same thing, the fixing of the price of a definite collection of commodities. With a suitable bank policy it should thus be possible to maintain a price-level having its secular variations in inverse proportion to changes in the value of this collection of commodities relatively to all commodities. If a sufficiently representative collection of commodities were chosen, such fluctuations in value could not take place to a marked degree, and it would thus be possible by means of an enlightened bank policy to stabilise the general price-level so far as to eliminate secular variations.

If we compare what has been said in the previous chapter about the effect of the bank-rate as a regulator of the supply of the means of payment with the conclusions drawn in this chapter, we can answer the question in what way the general price-level is influenced by the bank-rate. A lowering of the interest rate of the banks means a keener competition of the banks on the capital market, as newly created bank means of payment compete with the real savings of the public. The demand for capital-disposal, increased through these favourable conditions, is in part satisfied merely by the release of newly created bank money. An extra purchasing power is thereby created, against which there is no increase in those objects that may be purchased. This purchasing power competes with the genuine purchasing power on the market. The inevitable consequence is then a rise in prices, which must continue until the total nominal purchasing power is completely absorbed. As a result of this rise in prices, room is made for a certain quantity of bank money which is then retained by commerce.

These considerations lead to a final solution of a controversy

which from early times has been the centre of discussions relating to monetary policy. At every opportunity, the banks urged against the quantity theory that control over the volume of means of payment did not lie with them, as the public would never absorb more money than it actually needed. We now see that the banks, by fixing too easy terms for advances, can cause the public to absorb an increased quantity of money, and that such an increase of nominal purchasing power must result in a rise in prices. This rise in prices increases the real demand for money in the same proportion, and therefore the public must retain a corresponding amount of money. It is not certain that every arbitrary increase in the quantity of money will be taken up by the public. But it is certain that the increased quantity of money will result in a rise in prices, and a rise in the demand for money corresponding thereto. Any money in excess of this will be returned to the banks by the public. If, however, the credit terms continue to remain so attractive that the demand for capital is in part satisfied by the creation of new bank money, the same process must be continually repeated. The price-level is raised, and the demand for money must rise correspondingly. What we are able to observe statistically in such conditions is a constant rise in the general price-level and a parallel increase in the supply of money. These two quantities increase proportionally to each other. But we now know where the cause lies. The activating factor of the whole movement is furnished by the constant creation of artificial purchasing power. We thus arrive at a satisfactory formulation of the quantity theory.

A depreciation in the value of money caused through too abundant a monetary supply is commonly termed *inflation*. The opposite process is termed *deflation* – that is, an appreciation in the value of money caused by an excessive scarcity in its supply. If the credit terms of the banks are too severe – always, of course, in relation to the actual situation of the capital market – the public will pay off its debts to the banks, means of payment will be destroyed, and the scanty supply of money will force down commodity prices. This process is continued as long as the interest rates of those responsible for creating money (in its widest sense) are kept higher than the

interest rate required at any given moment to maintain the capital market in equilibrium.

The extent of the inflation or deflation is measured arithmetically by the rise or fall in the general price-level. It is quite conceivable, and indeed has happened in abnormal circumstances, especially during the Great War and the years immediately following, that a rise in the price-level has been caused through a diminution in the supply of commodities. Such a rise of prices must, however, be restricted within narrow limits. If we take the normal supply of commodities to be 100, and if we suppose that this supply happened to fall to 80, which would be a very serious occurrence indeed, then a rise in prices would occur in the proportion of 80 to 100 – that is, only from 100 to 125. Such a rise in prices can, however, never be a ground for an increase in the supply of money, as the central banks maintained so often during the big inflation of the war-years and after. For, according to our assumption, the commodity turnover has fallen in the same proportion as the price-level has risen, and so the demand for money should remain unchanged. Strictly speaking, the supply of money should be reduced whenever the supply of commodities is curtailed, and at the same rate. If this is done, the scarcity of commodities cannot cause prices to rise. Thus, on strict monetary principles, every rise in prices must be termed inflation, as it is clearly based on a too abundant supply of money, having regard to the circumstances of the case.

The rise in prices in an ordinary boom period is, in strict accordance with this view-point, to be regarded also as inflation. It is true that non-monetary factors also may be cited as causes collaborating in the price movement. If, however, the supply of money were limited exactly according to the needs of the growing volume of real trade, then no general rise in prices could take place. The rise comes about only because the banks, during the upward swing of the trade cycle, stiffen their credit terms insufficiently and at too slow a rate, having regard to the prevailing conditions. Thereby inflation is caused. There is no doubt that the price movement could be considerably reduced if a stronger bank policy were applied. To what extent it might be practicable to manipulate bank

policy skilfully enough to prevent any rise in prices in the upward phase of the trade cycle, and any fall of prices in the depression, can be decided only by future experience. In order to get this experience central banks, however, must unequivocally recognise the maintenance of an invariable price-level as their function, and direct all their efforts towards the realisation of this aim.

If the banks are compelled by the State to provide bank money for State expenses, the responsibility naturally falls on the State. This does not prevent the consequent rise of prices from being caused by an increase in bank money, as in the previous case, and also from having the character of an inflation. In actual practice, the worst cases of inflation are of such a nature. The economic possibility of providing the State with a source of income through inflation is explained by the fact that wages, interest, rents, and other more or less fixed incomes, do not rise to the same extent as the supply of money or commodity prices. Inflation is then a means of exploiting a large section of the population, the State actually robbing them of a substantial part of their real income. If the State afterwards deplores and condemns this exploitation, this is pure hypocrisy, for which a defective understanding of the true nature of inflation is a rather poor excuse.

In the theoretical representation of the quantity theory, attention must of necessity be paid to changes in the velocity of circulation of money. To the extent that such changes appear of themselves, their effect on the price-level must be measured, and theoretically this presents no especial difficulty. More important are those cases where the velocity of circulation is influenced by an alteration in the supply of money. One might be inclined to suppose that an increase in the supply of money would cause a reduction in its velocity of circulation, which would prevent a rise in prices, at least in part. As a rule, this is not the case. On the contrary, the increased supply of money generally seems to result in an increased velocity of circulation. In the normal boom periods, this is a result of the general stimulating effect of the brisk state of trade. In the worst examples of extensive inflation by the State, the velocity of circulation of money reaches abnormal heights, on account of the

fear that the value of money will soon fall still further. If this fear has reached such a pitch that no one will hold money even for a very short time, then, as the experience of Germany has manifestly taught us, money nearly ceases to be of any use at all.

In the previous chapter, we were content to say that the "true" or "normal" rate of interest could not be defined as a "real rate of interest," a "marginal productivity of capital," or such-like, for the rate is by its very nature a market price, and the market is always strongly influenced by the rate-policy of the banks. It is, therefore, quite clear that the "real interest on capital" can be defined only as a market rate of interest formed in certain definite conditions of the market. Our latest results now allow us to fix the conception of the real interest rate for capital more precisely.

In our theory of capital, we defined the interest on capital as the price which is paid for the right of disposing over a unit sum of money during a unit period. In this, the sum of money could be conceived only as an abstract sum expressed in the scale of reckoning formally taken as unchangeable. Now, as we consider the possibilities of a change in the value of money, the concept of a rate of interest on capital must be determined in regard to those changes also.

If the bank-rate is kept so low that the value of money falls, then the person who advances money will, when his loan is repaid, receive a smaller real capital than he originally lent. He sold capital-disposal on the market and stipulated for a certain interest. The bargain, however, turned out otherwise. He has not received back his capital undiminished. The interest, then, is not a sufficient compensation for his sacrifice. For the lender, too, to be compensated for the loss of capital caused through the fall in the value of money, a higher rate of interest would have to be paid. If we suppose the market rate of interest to be raised for this reason, we approach a rate of interest which will not cause any further fall in the value of money. If this rate is attained, the lender will sell a mere capital-disposal, and will get the price of it in the market rate of interest.

The true interest on capital might therefore be defined as that rate of interest at which the value of money remains unaltered. At

this rate of interest just so much new bank money will be put into circulation as corresponds to the growing needs of trade, the price-level remaining constant. The competition of bank money with savings on the capital market may be considered as normal, and the rate of interest which keeps the capital market in equilibrium may be defined as the "natural rate of interest." The rate-policy which, under a free standard, strives to keep the price-level constant would then be identical with a rate-policy which seeks to bring the bank-rate into harmony with the natural rate on capital. This lays down what is to be understood by a sound direction of the capital market and a correct distribution of productive forces between the present and the future. Nevertheless, there is inevitably something conventional in all these attempts to define interest on capital. For it is assumed in the definition that the invariability of the price-level is to be taken as "normal," and this is by no means self-evident (§ 58); in addition, the concept of a general price-level always contains a certain conventional element in the construction of index numbers.

### § 58 *The Stability of the Value of Money*

The considerable secular variations in the value of money since the middle of the nineteenth century have naturally raised the question of whether it would not be possible to avoid such variations and to create a monetary system in which, on the whole, the value of money would remain constant. As variations in the value of money were rightly ascribed to fluctuations in the supply of gold, this question was bound to lead to a demand for the substitution of a more perfect monetary standard in place of the gold standard.

The great fall in prices from the beginning of the 'seventies to the middle of the 'nineties was used by the bimetallists as the starting point in their endeavours to create a monetary standard on the basis of two metals instead of one, in order to be more independent in the case of an eventual scarcity of one of the metals. We have already demonstrated in § 41 that a foreign element was thus introduced into the problem of the stability of the standard. The

problem in itself required only the fixing of *one* price, or, what amounts to the same thing, an average of a certain group of prices. Bimetallism requires, in addition, the fixing of a relation between two prices, a matter that lies quite outside the problem of the standard.

Fisher has submitted a proposal to create a "standard dollar" which should represent a constant gold value but a variable quantity of gold. The gold-content of the dollar, or rather the amount of gold which lies at the back of that abstract currency unit, "the dollar," should be varied from time to time in accordance with the state of the gold supply, and, in this manner, it should be possible to maintain a constant price-level.

This much-discussed plan is exposed, to some extent, to the same objections as bimetallism. Binding the standard to the metal, gold, has a purpose so long as it is thereby possible to maintain the price-level substantially unaltered, or as long as we abstain from using better means of regulating the price-level. If, however, the shortcomings of this method of regulating the general price-level are recognised, and an attempt made to keep as constant as possible a price-level defined by a definite index number – that is, the collective price of a certain group of commodities – we are really again introducing a foreign element into the problem, when we attempt to fix the price of gold from time to time under a standard regulated in this fashion.

If we wish to create a monetary system with the value of money invariable, this object must be our sole aim, and other outside problems must not be merged with it. The solution of the problem, according to what has been said above, lies in starting from a completely free standard, and then attempting to stabilise it by fixing the collective price of a definite group of commodities. The only possible means for doing this is the rate-policy of the banks. There is no doubt, from the point of view of monetary theory, that it is possible by this means to create a standard in which there would be no important secular variations in the general price-level.

During the Great War, not only was the gold standard generally abolished and replaced by paper standards, but, as shown in § 42,



there took place, as a result of these changes, a big change in the value of gold itself. After the United States had restored the gold standard, the general price-level, expressed in dollars, rose to a maximum of 272 in May, 1920, compared with 100 before the war. The value of gold at that time was hardly 40 per cent. of its pre-war value. The ensuing process of deflation raised the value of gold to roughly 67 per cent. of its pre-war value. Later, it stabilised itself at this level, since the general price-level in the United States until the middle of 1929 remained in the neighbourhood of 150 (Bureau of Labour). This stabilisation is the result of American banking policy. The value of gold has, since the war, been determined to a great extent by the value of the dollar. The gold standard has thus lost an essential characteristic of the typical old-fashioned gold standard. A country which formerly went on to a gold standard thereby bound its money to a commodity the value of which was determined by external objective factors. The individual country's monetary demand for gold, of course, exerted a certain influence on the value of gold, but this influence was not very great and could be neglected. This was not the case, however, in the period when a single great country, the United States, had a gold standard, whilst the rest of the world remained on a paper standard. Many countries were at that time dubious about returning to a gold standard, which, in effect, would signify only a linking to the dollar, and which would bring their own standard into subjection to American banking policy. It was clear, however, that were a number of countries, more especially England, to return to the gold standard, the value of gold would receive a broader basis.

The return to the gold standard was undoubtedly the only solution if the world wanted to have an orderly monetary system within a short period of time. Nevertheless, it could not be overlooked that gold had a much less stable value than before the war. One could not be content, therefore, with simply restoring the gold standard, but conscious attempts would have to be made to supply gold in the future with a satisfactorily stable value. As the gold supply of the world had become decidedly too small, as we have already seen, prices could be maintained at their existing level only if

the world's monetary demand for gold were systematically restricted.

In my memorandum to the League of Nations for the International Financial Conference at Brussels in 1920, I drew attention to this problem in the following words: "It thus appears that the whole world has a direct common interest *in preventing a further rise in the value of gold*. The present low value of gold is principally the result of a relatively diminished demand for it for monetary purposes. The actual circulation of gold has been suspended fairly generally and the big central banks have considerably reduced their requirements for relative gold-cover. If a return to pre-war conditions were to be made in this respect, the inevitable consequence would be that the value of gold would be raised. In order to avoid this, it is necessary for all countries to refrain from measures directed towards re-introducing an actual gold circulation, and they should content themselves with their present standard of gold-cover as the basis of their paper circulation. Countries which are able to attract gold from the rest of the world must refrain from doing so. Thus the stabilisation of the value of gold during the coming years clearly requires a close co-operation between all countries."

At the International Financial Conference at Genoa in 1922, it was not possible to obtain recognition for the first of the points of the programme referred to. Later developments have demonstrated, however, its unavoidable necessity. The act of Germany, when it restored the gold standard in 1924, in renouncing the circulation of gold coins, could well be regarded as a temporary expedient. But it was of decisive significance that England in 1925 went on to a gold standard without a gold circulation. The new English gold standard has retained only the essential crux of the old gold standard, whilst all subsidiary details have been discarded. It is the typical standard as represented in this book, namely, a gold standard which is nothing more than a paper standard in which the price of gold is fixed within certain narrow limits. As England, which first set up the gold standard and which still remains the centre of the world's monetary system, was content with a gold standard of such a nature, it was no longer possible to regard it as a standard of second-rate

quality. The example of England was soon followed by a number of other countries, and the circulation of gold coins has now ceased to play a practical part in the world economy. In this respect, it was of greatest significance that India was successfully dissuaded from introducing gold coins into circulation, and thus a new demand for gold which would have been fatal to the policy of economising gold was averted. It is true that from time to time a restoration of gold coins into circulation is spoken of, but on the whole we may take it that such a use of gold belongs to the past. Thus the coinage system, which used to have ascribed to it such an excessive importance in the monetary system that these two concepts were even regarded as identical, has now ceased to be a factor in the monetary system, at least in so far as full-bodied coins are concerned. Coinage, as a matter of fact, is for the future a closed chapter in the history of money.

The second point in the programme for economising gold was unanimously adopted by the Genoa Conference, whereby a concentration of the holding of cash balances of central banks in large financial centres, such as London and New York, was recommended as a suitable measure. A certain amount of co-operation between the central banks to reduce the demand for gold actually took place in the years following, although not in the official forms originally proposed.

By means of the policy of economising gold described above, the value of gold has actually been maintained at a fairly satisfactory stability until the middle of 1929. Professor Fisher's index number for the wholesale prices of the United States remained for the five years 1924-8 around 150. The annual index was 149 for 1924 and also for 1928. Even in July, 1929, the index was at this figure. It was thus demonstrated that a conscious regulation of the demand for gold could result in a certain stability of its value, and also of the whole gold standard system of the world.

The restrictive banking policy of the United States, which had as its object the damping down of the excessive speculation on the New York Stock Exchange, caused a depression of commodity prices from the middle of 1929, which was to lead to dire results.

Confidence disappeared, and with it the spirit of enterprise, and very strong and speedy measures became necessary in the way of easing credit to combat the continued fall of prices. In fact, such measures were taken when the discount rates of the Federal Reserve Banks were gradually reduced, and when large quantities of Government securities were purchased by the system. Action, however, was taken far too slowly, so that two years were lost without success having been attained in checking the fall in prices.

At the same time, a breach was made in the policy of economising gold, in that two countries – France and the United States – attracted tremendous quantities of gold to themselves and thereby aggravated the scarcity of gold in the rest of the world. The large imports of gold into these two countries took place on account of their favourable balance of payments, artificially increased by war debt payments. Such a movement of gold could only be prevented by an export of capital on a large scale. But during the period of falling prices the necessary confidence was lacking. The central banks of the countries in question have not done what was required of them in the way of reducing discount rates and taking other measures for easing credit, in order to encourage the export of capital. It was especially noticeable in France how a lack of freedom on the part of the central bank, and an ineffective and politically influenced organisation of the capital market hindered the pursuit of a sensible monetary policy.

The consequences of this course of development on the world economy have been injurious to a degree rarely attained earlier. The number of unemployed in the leading industrial countries has risen to fantastic figures, and all countries have been hit by a devastating industrial crisis. The fundamental importance of a stable monetary system for the well-being of mankind has never been so obviously demonstrated as in these hard times. But even now the explanation of the causal connection and of the essentially monetary character of the whole crisis has met with strong opposition. All possible kinds of explanations for the fall in prices have been advanced, but wide and influential circles have obstinately refused to see that the explanation lies in a defective monetary

policy. A correct understanding of the deeper roots of the world economic crisis has been exhibited by only a few leading personalities, most of whom are English.

The League of Nations set up in 1929 a Gold Delegation to study the problem of the scarcity of gold. In its first memorandum, the delegation drew up calculations for the probable world gold supply during the next ten years. Two different calculations of the future production of gold are reproduced. According to the first, the gold production will fall off from 405 million dollars in 1930 to 314 million dollars in 1940. According to the second estimate, it will fall from 404 million dollars in 1930 to 370 million dollars in 1940. In its further calculations, the delegation bases itself on the more favourable estimate. It estimates the non-monetary demand for gold in 1930 to be 180 million dollars, and assumes that this demand will increase at the rate of only 1 per cent. per annum, which is clearly a very low estimate when it is assumed that economic progress will be at a rate of 3 per cent. per annum. On the basis of these particularly favourable assumptions, the delegation comes to the conclusion that in 1930, 224 million dollars of gold will be available for monetary purposes, but in 1940 only 170 million dollars.

At the end of 1928, the gold reserves of the central banks amounted to rather more than 40 per cent. of the liabilities falling due daily. If such a gold cover is maintained, and on the assumption of an annual progress of 3 per cent., the annual demand of the central banks for new gold will rise from 303 million dollars to 408 million dollars in 1940. One would, therefore, have to reckon with a deficit, rising from 79 million dollars in 1930 to 238 million dollars in 1940. At the end of the period, then, substantially less than half of the monetary demand for gold would be satisfied. Even if the central banks were to reduce their requirements for gold cover to 33 per cent. of their daily liabilities, there would be a deficit of 170 million dollars in 1940, and only half of the demand would be met.

Bearing in mind the fact that the assumptions for these calculations of the possibilities have been made on an especially favourable

basis, one must conclude that the prospects for a satisfactory gold supply are very bad; in other words, equilibrium is possible only if the claims to gold reserves are radically reduced. The calculation appears much more favourable if we assume a rate of progress of the world economy of only 2 per cent. per annum. But, even then, there will result a deficit at the end of the period, even if the central banks are content with a cover of only a third. The practical problem which arises is what restrictions are necessary in the monetary demand for gold in order that the increasing scarcity of gold will not stand in the way of a normal rate of progress of 3 per cent. per annum in the world economy. Our measures must, of course, be planned in such wise that the general price-level may be maintained unchanged on this assumption of a rate of progress of 3 per cent.

The Gold Delegation published a second memorandum in 1931, dealing with the policy of central banks and especially with their requirements for gold cover. The most important recommendation which the delegation made was for a general reduction in the legal requirements for gold reserves, which should be carried out on the basis of an international agreement. We have already seen that the legislature is never in a position to regulate either the actual supply of money or the actual gold backing, but that it only stands in the way of a rational central bank policy. This being so, all legal regulations regarding gold-cover should be rather removed, and the full responsibility for the regulation of the supply of money, and for the maintenance of gold reserves, should be laid on the banks. It would seem, moreover, that an international agreement would be more easily reached in this direction than one dealing with specific figures for gold-cover. On the other hand, the legislature should lay on the central banks the absolute obligation of maintaining the gold parity of their respective currencies in all circumstances.

In conclusion, we must say a few words about the object to be kept in view, when we once obtain command over the value of money. In an economy in which productivity increases by a certain annual percentage, it may be assumed either, on the one hand, that commodity prices remain unaltered, and that consequently the

incomes of the producers increase at the given percentage, or, on the other hand, that the producers' incomes remain constant but commodity prices fall by the given percentage. This problem is of primary importance with regard to the relation between borrower and lender. If commodity prices remain constant with increasing productivity, a lender will receive back a sum of money which represents the same real quantity of goods as the original loan. He will draw no benefit from the increased productivity; relatively, he will be worse off. The whole benefit goes to the borrower who, if he is a producer, as is generally the case, profits directly by the increased productivity, production costs remaining constant; or if, for example, the borrower is a State, which borrows for the purposes of consumption, it sees its financial strength increased by the increase in the national dividend. If, on the other hand, commodity prices fall at the same rate as productivity increases, the lender receives his share of the increase, whilst the borrower receives no benefit in respect to the loan from the increase in productivity.

Which alternative is to be preferred, or whether a middle course should be adopted, is a question in which great interests are opposed to each other, and to which a deduction from an abstract ideal of justice cannot supply an answer. In such circumstances, the deciding view-point must be the general well-being of the society. Now, there can be no doubt that a monetary system with a constant price-level is incomparably better for the development of economic life than a monetary system in which one must always reckon with a fall in commodity prices, and which therefore must inevitably exert a restrictive tendency upon production. Consequently, a constant value of money is to be decidedly preferred in the mutual interest of all who benefit from as high a state of industrial activity as possible. It must also be taken into account that the regulation of the general price-level is made much more difficult as soon as an object other than the maintenance of a constant price-level is aimed at, and if a fall of the price-level in a certain proportion to the increasing productivity is sought. For then it must be constantly ascertained how great the increase in productivity is at any moment, which, of course, is a very difficult problem.

From what has already been said, it may be seen that the only practical indicator of a constant value of money is the index of wholesale prices calculated on similar lines to the one now in use. This becomes more evident when one considers that it is not only a question of uniting the various interests in any one country, but also a programme must be drawn up which will meet with the approval of the whole world. The interminable discussions over the best method of calculating indices, which have attracted so much attention, in reality serve no practical purpose. A currency system, in which a good index of wholesale prices would remain constant, would be such an immense improvement on the existing conditions that disputes about the hypothetical advantages of other methods of calculation could be simply ignored. In this problem, we must never lose sight of the fact that monetary policy involves, above all, a practical task of fundamental importance for the whole world economy.



## CHAPTER XII

### INTERNATIONAL PAYMENTS

#### § 59 *The Adjustment of the Balance of Payments*

##### *First Case: Free Independent Standards*

So far, we have generally ignored international payments in the course of our study, and have concentrated our attention on the functions and position of money within the community, partly for the sake of the simplification of monetary theory which is then attained, and partly because, above all, it is necessary to show how money functions in a closed economy, and especially how a definite value of money is maintained – because, in other words, the soundness of a theory of money must first be tested in the simplest case of a closed economy. We have now to take into account the international functions of money. We shall see that the treatment of this question is considerably simplified by the preceding study of money in a closed economy. However, we shall deal only with the technique of international payments in so far as it is indispensable for a complete explanation of the theory of money; for the rest, readers should refer to the specialised text-books on the subject.

First, let us consider two countries having free and mutually independent currency systems. Clearly, payments between these countries can be effected only through the cancelling out of mutual claims. How does such an adjustment take place?

The regular international medium of payment is the bill of exchange. The following is the simple scheme of the adjustment of international obligations by means of the bill: The exporters of commodities in country *A* sell commodities to country *B* against bills drawn in the currency of *B*. These bills are sought after in country *A* by the purchasers of the commodities of *B*, and then are sent by them in payment to country *B*. In country *B* these bills are

redeemed by the acceptors. It is clear that, according to this scheme, all payments are effected in the currency of country *B*. It should be noted that payments between two countries may actually be effected, as they are in this scheme, from the point of view of country *B*. As long as there is equilibrium between the claims on both sides, this system is clearly sufficient for settling all payments between the two countries.

What is paid in country *A* for bills on country *B*? The reason why there is a demand in country *A* for bills drawn on country *B* is that they represent purchasing power on the market of country *B*. This purchasing power is clearly valued in *A*, on the one hand, in proportion to the lowness of the general price-level prevailing in *B* (in other words, in proportion to the value of money in *B*), and, on the other hand, in direct proportion to the height of the general price-level in country *A* itself. Thus the price of the bill on country *B* must, as an expression of the value of the currency of country *B* in terms of the currency of country *A*, be directly determined by the relation existing between the value of money in countries *B* and *A* respectively. This relation is the *purchasing power parity* of the two currencies.

The price of the unit of currency of country *B* in terms of the currency of country *A* is called in country *A* the *rate of exchange* on country *B*. (In England, on the contrary, the rate of exchange is, in most cases, given as the amount of foreign currency that can be bought by the unit of the home currency, the pound sterling.) The essential factor determining the rate of exchange is therefore the purchasing power parity, which in practice represents the normal level of the rates of exchange.

It is not possible to determine exactly the purchasing power parity on the basis of the definition here given. That is to say, the price-levels in two countries having different paper currencies are not exactly comparable. It is true that we can ascertain that the prices in one country are, on the average, roughly ten times as high as prices in the other country. An exact comparison would, however, be possible only if the various prices in the one country bore the same relation to each other as they did in the other country.

But then no exchange of commodities would take place between the two countries. International trade postulates that in this respect there shall be a marked inequality; thus, in the example given, certain commodities must be more than ten times as dear in one country as in the other, and other commodities must be less than ten times as dear. In such circumstances, as we shall see in Book V., where we have to study the theory of international trade more closely (§ 82), an exchange of commodities will take place between the two countries at a suitable rate of exchange. This rate is fixed by the requirement that there must be equilibrium in the exchange of commodities, so that one country may pay for its imports from another country by means of its exports to the latter. The rate of exchange so determined clearly represents its normal level, and may thus be taken as a more exact definition of the purchasing power parity.

A shifting of the general price-level in the one country in relation to the price-level of the other must obviously alter the purchasing power parity and thereby also the normal level of the rates of exchange. This has been particularly clearly demonstrated during the great changes since 1914 in the internal purchasing power of various countries. If two countries, *A* and *B*, have both experienced a period of inflation, but in *A* the general price-level has only doubled, whilst in *B* the price-level has increased sixfold, then the purchasing power parity of the currency of *B*, reckoned in the currency of *A*, represents only one-third of its former amount. The normal level of the rate of exchange on *B* must similarly have fallen to one-third of the former normal level. The new normal level of a rate of exchange may be obtained by multiplying the former level by the ratio between the degrees of inflation in the two countries. In this way, a new purchasing power parity may be determined on the basis of a known old purchasing power parity.

This deduction from theoretical analysis, which aroused so much opposition in the first years of the monetary upheavals, since it was such a great departure from the traditional points of view, has now been completely vindicated by abundant practical experience. After more or less normal conditions had reappeared in the sphere

of world trade, it became clear that the rates of exchange of the various currencies tended to oscillate round normal levels, which were determined by their new purchasing power parities, calculated in the manner described here. Strictly speaking, one must take into consideration the possibility that the normal levels might be altered somewhat as a result of changes in the entire economic situation of the countries in question, and also in the conditions of trade between them. The actual movements of the rates of exchange show, however, that such changes do not play a great part in determining the new normal level, except perhaps for countries with a very specialised trade.

The normal level of exchange rates is, in fact, determined by the purchasing power parity. It is not certain, however, that the prevailing rate of exchange will always coincide with this normal level. In actual practice, deviations from the normal level fall into two categories, the first consisting of the effects of external circumstances which arise only by way of exception, and the second resulting from constant fluctuations in the market situation.

Among the exceptional factors which result in a big deviation of the rate of exchange from its purchasing power parity, there is, above all, the undervaluation of a currency as a result of an anticipated internal depreciation. Such an undervaluation amounts only to the discounting of an expected diminution in value. In those cases where the currency underwent a continuous and severe process of inflation, the international undervaluation of the currency assumed at times large proportions. The antithesis of such an undervaluation is, of course, the overvaluation of stable currencies in such an inflated currency. An independent overvaluation of a currency may occur – as the experiences of Denmark and Norway in 1925 and 1926 demonstrated in particular – when the world anticipates that, as a result of a systematic deflation in order to restore the former coinage parity, the currency will attain a greater internal purchasing power.

A second cause of the undervaluation of a currency lies in measures taken to hinder its export, such as export embargoes, high export duties, special high prices for foreign buyers, and so forth.

The depressing effect of such measures on the international estimation of the currency becomes at once clear when we recognise that other nations as a rule buy the currency principally because it represents purchasing power on the internal market. Strictly speaking, every one-sided hindrance to the trade between two countries must affect the rate of exchange between them. The ordinary commercial-political measures, such as tariff charges, etc., do not seem to exert a great influence on the rate of exchange.

An international undervaluation of a currency will result in giving an especial stimulus to exports, and at the same time will restrict imports. The premium which exporters enjoy as a result of the abnormal rise in the rate of the foreign exchange increases their power of competition in the foreign markets, with a result that foreign producers often complain. The so-called exchange dumping has repeatedly led to tariff measures to prevent the entry of imports specially favoured in this way. In dealing with such problems, it must always be borne in mind that the exports of a country are specially favoured only as a result of an international undervaluation of the currency, and that a low-value currency does not particularly encourage exports as long as foreign valuation of it corresponds with the purchasing power parity.

According to the point of view which used to prevail, the rate of exchange between two countries was determined solely by the market situation – that is, by the demand for, and supply of, bills. The complete inadequacy of this theory, which was quite unable to give any factors determining the normal level, was demonstrated during the upheavals in the monetary system after 1914. Only when one recognises that the purchasing power parity is decisive for the normal level of the exchange rates can one conduct an inquiry into the influence of the market situation on the exchanges with any hope of success.

There is no doubt that temporary fluctuations in the exchange rates may be caused by temporary maladjustments in the balance of payments. Such maladjustments in the balance of payments are occasioned in the main by a disequilibrium in the demand for, and supply of, bills of exchange. As soon as bills upon country *B* become

scarce in country *A* – that is, as soon as, at the prevailing rate of exchange, the demand for bills exceeds the supply – then clearly the rate must rise. It appears that people have generally deluded themselves into thinking that this explanation provides a satisfactory theory of the rates of exchange. This is, of course, not the case. In such a problem as this, it is always necessary to make clear how a position of equilibrium does come about, and in what way the rise of prices contributes to establish an equilibrium.

The stability of the price-system always presupposes that a rise in prices diminishes the demand or increases the supply, or results in producing both effects at the same time, so that equilibrium is again restored between supply and demand. In what way can a rise in the rate of exchange reduce the demand for means of payment on country *B* or increase their supply? This is the question which the theory of the foreign exchanges has to answer.

The problem is closely connected with that of how temporary irregularities in the international balance of payments are smoothed out. Such an adjustment takes place in two main ways: by transferring payments in one direction or other, and by altering the balance of claims. Under the heading of "*Transference of Payments*," we may include the following operations:

- (a) Deferring payment (prolongations, transferring payment from present to future).
- (b) The discounting of claims not yet due, chiefly bills of exchange (transferring payment from the future to the present).
- (c) Loans proper, often in the form of accommodation bills of exchange, Treasury bills, and such-like (synonymous with a transference of payment to the future).

Loans for adjusting temporary fluctuations in the balance of payments consist chiefly of short-term loans, whilst a permanent unfavourable balance must be made up by means of fixed loans.

Further, an adjustment of an unfavourable balance is often arrived at by creating new claims on abroad by means of increased commodity exports or exports of securities, as well as by restricting

the creation of new debt obligations through reducing commodity and security imports.

It is obvious that an unfavourable balance may be improved by these means. They will all be made more effective by a rise in the rates of exchange for foreign currencies, although their degrees of sensitiveness to fluctuations in the rates of exchange vary greatly. With a high rate of exchange, payments will be postponed to a certain extent and thereby the demand for means of payment at that moment will be reduced. This, however, in all probability, does not play a very great part in adjusting the balance of payments. In the main, this adjustment is brought about through the creation of sight means of payment on abroad. The fact that a rise in the rate of exchange stimulates the discounting abroad of claims not yet due, as well as the raising of foreign loans, is explained by the higher prices which foreign balances accumulated in this way yield in the home market at the higher rate of exchange. In the same way is explained the effect of the rates of exchange upon exports. As long as the general price-level remains constant within the country, the home producers have the opportunity, through exporting commodities and selling the foreign currencies on the home market, of turning to account the rise in the rates of exchange. Similarly, speculators can purchase securities on the home stock exchanges, and export them and sell in their own country the foreign currencies so obtained, and so again make a profit from the rise in the rate of exchange. Naturally, the traffic in securities is much more sensitive to fluctuations in the exchange rates than is the commodity trade.

It must further be noted that the stimulating effect of a higher rate of exchange upon the exports lasts only as long as the internal price-level does not rise. If there has been a rise of prices within the country, corresponding to the rise in the rates of exchange, any special advantage to the exporter disappears. The higher rates of exchange are, then, simply an expression of the disparity in value which has come about between the home currency and the foreign currencies. Such a disparity is of no significance for the balance of payments of the countries; it signifies only that the purchasing

power parity – that is, the normal level of the exchange rates – has undergone a displacement.

Any discussion about the determination of the exchange rates by the market situation must base itself on the fact that any irregularities in the balance of payments must always be adjusted, so that the balance of payments must always finally show a complete agreement between the debit and the credit sides, and this not only for long periods of time, but also for each single day. A displacement of the rates of exchange is thus not to be explained away as a result of defective agreement between the supply of, and demand for, foreign means of payment, but must be regarded rather as a means which helps the market to adjust the balance of payments so that an equilibrium is secured.

#### § 60 *Second Case: Metallic Standards*

We now turn to the case in which the two countries are on metallic standards. These standards, in the first place, may be different. Let us suppose that one country has a gold and the other a silver standard. The standards are no longer completely independent of each other as they were in the previous section. The holder of gold currency may change it for bar silver and have it coined in the silver standard country. The value of the silver currency expressed in the gold currency thus depends on the price of the metal silver. From this there arises a definite connection between the two currency units; the value ratio between them is, to a great degree, determined by the value ratio of silver and gold upon the open market, and the rate of exchange cannot differ widely from that rate which corresponds to the value ratio between gold and silver. Deviations of the rate of exchange from this normal level are of the same nature as deviations from the parity rate in the case where the two countries are on the same metallic standard, and thus do not need to be specially explained.

Still closer is the connection between the two standards when they are based on one and the same metal. Let us suppose that both countries are on a gold standard. This means that movements in



the price of gold in the two countries are confined between two fairly narrow limits. It is, therefore, always possible for the holder of currency *A*, by buying gold in country *A* and selling it in country *B*, to obtain the currency of *B*. The highest costs of acquiring *B* currency in this way occur when the gold price in country *A* is at the upper limit fixed by the gold standard of *A*, and when at the same time the gold price in country *B* is at its lower limit; the lowest costs arise when the price of gold is lowest in *A* and highest in *B*. The outlay which arises in country *A* in acquiring the unit of currency *B* by sending gold is termed *the gold export point* of country *A*, or the *upper gold point* for *A*. This upper gold point can vary within certain limits. In addition to the buying and selling prices of gold, it is determined by the costs of transshipment.

On the other hand, it is always possible for the holder of *B* currency to acquire *A* currency by buying gold in country *B* and selling it in country *A*. But what he receives for the unit of *B* currency depends on the price of gold in the two countries. He receives the most when the price of gold in country *B* is at its minimum, and when at the same time the price of gold in country *A* is at its maximum; and he receives the least when the contrary conditions obtain. The amount which may be obtained for the unit of *B* currency by sending gold from *B* to *A* is termed the *gold import point*, or the *lower gold point* for country *A*.

Both gold points are therefore variable within certain limits. At any given moment, however, they are fixed, and indicate the extreme limits of fluctuation in the rate of exchange. The price of the unit of *B* currency cannot rise above the upper gold point, as then, instead of buying bills, people would export gold, or, rather, speculators would export gold, draw bills upon it, and sell these bills on the market; this process, as a result of competition, would clearly bring down the rate of exchange to the gold point. On the other hand, the rate of exchange cannot fall below the lower gold point. For the holder of a bill upon *B* would not content himself with such a low price, but would rather sell his bill in country *B* and draw the proceeds in gold, or arbitrage operators would buy the bills on *B* and, by importing gold, convert them into *A* currency;

and so as a result of competition the rate of exchange would be forced up to the lower gold point. Thus, from the point of view of international payments, the gold standard is to be regarded as a free standard, in which the movements of the rate of exchange with another gold standard country are confined within two slightly variable, but always rather narrow, limits. This limitation will exist as long as the gold standard is effectively maintained in the two countries – that is, as long as gold may be bought and sold at a price within the legal standard limits. As long as the rate of exchange varies within the gold points, the gold standard, with respect to international payments, is to be regarded entirely as a free standard, and the rate of exchange is regulated in exactly the same way as in the case of free standards. A rise or fall in the exchange rates, occurring as the result of a temporary inequality in the balance of payments, the value of money remaining constant, will set up those counteracting forces mentioned in the preceding paragraphs for the adjustment of the balance of payments and the restriction of the movements of the rate of exchange. If, in spite of this, one of the gold points is reached, a gold movement from one country to the other begins, which is thus a commodity export of a special kind, being calculated to restore equilibrium in the balance of payments. The gold supply of a country thus acts as a reserve for adjusting a temporary deficit of the international balance of payments. If this reserve is completely exhausted, there remain only the usual means for adjusting the balance of payments – the floating of loans abroad, and the export of commodities and securities. In that case, however, the gold standard is no longer effective.

These means are naturally much in demand as soon as the rate of exchange approaches or even exceeds the upper gold point. This automatic regulation of the balance of payments takes place only on the assumption that the value of money of the country is not lowered below that obtaining abroad. If, on the other hand, the unfavourable balance of payments and the rise in the rate of exchange are the result of a general rise in domestic prices in comparison with prices abroad (in other words, a shifting of the purchasing power parity), the rise in the exchange rates will meet with no such

hindrances. But even then the stock of gold, as long as gold is sold freely at the legal par rate, affords a temporary obstacle to a further rise in the exchange rate, but not against a continuous rise in prices. If the gold supply is completely exhausted, or if the convertibility of notes is suspended, the rates of exchange and prices may continue to rise indefinitely.

The stabilisation of the rates of exchange is, in the last resort, completely dependent on the stabilisation of the relative value of money – that is, on the factors which regulate the value of money in the two countries.

According to the classical theory, the supply of gold must be distributed among the gold standard countries according to their needs, so that the price-levels of the various countries will be much about the same. If the price-level were to rise in one of the countries, commodity imports into this country would be stimulated, commodity exports, on the contrary, would be discouraged, so that gold would leave the country, and thus the gold stock would be reduced and the price-level would fall in accordance with the quantity theory. This would furnish an automatic regulator of the distribution of gold and of the price-levels in the various countries. This theory would be true, on the whole, if the currency consisted entirely of gold. In reality, this is not the case; even in gold standard countries the currency has its independent existence, and is connected with gold only in the way we have already described. The nucleus of truth which the classical theory contains must have been correctly represented in the arguments of this paragraph.

This so-called currency theory, which was the basis of Peel's Bank Act of 1844, and which is the starting point for the "fiduciary" limitation of the note issue, was a practical consequence of this classical theory of the international distribution of gold and the regulation of the value of gold. If bank-notes circulate alongside of gold, this should be permitted only on the assumption that the total quantity of the circulating media shows the same changes, under the influence of fluctuations in the price-level, as a pure system of gold circulation would have shown. Therefore, every diminution of the gold supply of a country should bring about an absolutely equal

reduction of the supply of means of payment. Such legislation suffers not only from the same defects of principle as every legal fixing of the note reserves (§ 45), but, in addition, suffers from the mistaken idea that the gold standard is a system of actual gold payments.

The practical effect of the gold standard is that the central bank of the country buys gold at a certain price and sells it at a somewhat higher price. Between these two prices there is a small margin which, in most cases, rarely exceeds 1 per cent. One may ask whether this margin should not be made still smaller, and whether it ought not to disappear completely with an ideal gold standard. There seems to be a fairly widespread impression that, through the creation of an international bank, which should serve, so to speak, as a central bank for central banks and should accept gold deposits from them, the margins for the fluctuations of the rates of exchange could be reduced to zero, and thus complete stability of the exchanges could be brought about.

Let us first assume, in order to answer this question, that the internal value of the currency is maintained, and that, therefore, its purchasing power parity corresponds to its legal parity. As we have seen, temporary fluctuations in the rate of exchange will call forth strong counteracting forces which generally suffice to restore the equilibrium of the balance of payments. Only by way of exception will it be necessary to resort to gold exports for this purpose.

A diminution of the margin between the buying and selling prices of gold would restrict the scope of the effectiveness of these natural forces counteracting a deviation of the exchange from its purchasing power parity, and so a correspondingly heavier burden would be laid on the gold exports. Such a change in the international system of payments would not be economical. A central bank which bound itself to buy and sell gold or gold exchange at fixed prices could demand with justice that these prices should afford a certain opportunity for profit-making, which would be sufficient to cover the chief expenses.

The most important temporary deviations from the purchasing

power parity are, in normal currency conditions, caused through international movements of capital. It then seems a very natural consequence for such deviations to call forth counteracting forces in the form of the capital movements described above. This natural reaction against abnormal unilateral capital movements might be used with advantage before the central bank is called on for capital transfers in the shape of gold.

If the international value of a currency falls as the result of a depreciation in its internal purchasing power, it is an advantage that the central bank is not forced to export gold at once, but has time to bring in measures to raise the internal purchasing power of the currency. According to the old theory, gold exports in such a case would force the central bank to reduce the internal supply of means of payment, and thus the purchasing power of the currency would be brought to its proper level. In practice, this decrease in the supply of money does not take place so automatically, as the central bank has, as a rule, a free gold reserve which can be reduced without producing an effect on the actual supply of money. On the other hand, a sensible central bank policy should feel it necessary to inquire into the situation and to take the requisite restrictive measures, even without being forced to do so by the necessity of an immediate export of gold. It is too much to require the central bank to restore equilibrium without allowing for a small margin within which the exchange rates may rise.

#### § 61 *The Significance of Banking Policy with regard to International Payments*

With regard to internal payments, banking policy, as already seen, has the task under a gold standard of regulating the supply of money so that the money is kept as near as possible at parity with gold. For this purpose, banking policy alone is not sufficient. In general, even in order to avoid a temporary premium on gold, it is necessary to keep a gold reserve to satisfy temporary increases in the demand for gold. If gold does not actually circulate, this reserve

will not be used for internal payments, but, for the domestic economy, represents only a means of satisfying the non-monetary demand.

Similarly, banking policy must occupy itself with the maintenance of the currency in regard to international payments. This task has already been partly fulfilled by a banking policy which keeps the currency at a parity with gold on the internal market. For, thereby, those changes in the general price-level are avoided which drive the exchange rates to the upper gold point and thus cause gold exports. Internally as well as externally, it must be the endeavour of banking policy to avoid claims being made on the gold reserve as much as possible. Even for an enlightened banking policy this is not completely attained. The gold reserve must be kept to satisfy those demands for gold which will arise in spite of everything. With respect to external payments, the gold has the task, described in the preceding sections, of making up the deficit of foreign means of payment in the external balance of payments. Banking policy has to see that this task, like the corresponding task in regard to home trade, arises only occasionally, and that, as soon as the balance of payments corrects itself, the gold will flow back into the country and into the bank reserves. It is only when the general price-level is properly regulated by banking policy that the bank reserve can thus be protected against home or foreign demands, and be preserved for its purposes.

We have seen that, in respect to the domestic demand for money, the gold reserves of the central bank can be greatly reduced if gold does not circulate within the country. Similarly, claims on the gold reserves may be greatly reduced if other means of payment are used instead of gold for settling international payments. As such, there are, as far as central banks are concerned, mainly sight claims on foreign banking houses, contango loans employed on the principal stock exchanges, and, above all, first-class bills on those places. These bills may be drawn in part by people inside the country on people abroad, but they may be bought particularly in the foreign centre in order to employ the bank reserves profitably. A central bank which has at its disposal sufficient quantities of such credits on

the chief world centres of payments can always satisfy demands for foreign means of payment by issuing orders on these credits, and thus avoid gold shipments. This way seems to be the most natural and the most convenient, as, in the last analysis, it is not gold, but foreign means of payment that are demanded. If demands for gold for export are thus avoided in all ordinary cases, and if no gold at all circulates within the country itself, the central bank can content itself with a comparatively small gold reserve. This idea found expression in the proposals, which we have already discussed, of the International Financial Conference at Genoa, 1922, regarding a concentrated holding of the cash balances of the central banks in the great financial centres.

Whether the reserve consists of gold or of foreign credits, it must in any case be protected from excessive claims. As has already been emphasised, this is done primarily through a banking policy which aims at keeping the general price-level as much as possible in agreement with the relative gold supply of the world. Let us assume for the sake of simplicity that the gold supply has remained constant during a period of time; then banking policy must endeavour also to keep the price-level constant. Let us assume also that this has been completely successful for a period. The means to this end is the credit policy, especially the discount policy of the banks. So that the general price-level shall remain constant in the period taken, a quite definite discount policy must also be pursued. Let us assume, further, that the price-level abroad remains unaltered. On these assumptions the domestic discount policy will protect the reserves against all claims which would otherwise arise from an increase in prices and an increased demand for domestic or foreign means of payment. The demands for means of payment which, nevertheless, are made by the home market arise from a marked increase in trade activity at certain seasons of the year, or from periods of brisk trade, and are primarily satisfied by increasing the supply of bank money. Similarly, special demands for foreign means of payment will arise from an occasional excess of foreign liabilities. Such an occasional negative balance of payments may easily arise without a change in the general price-level; it may also when on the whole there has

been equilibrium in the balance of payments over a long period, and again as a result of the lending of capital to abroad or a bad harvest, etc. Such occasional demands for foreign means of payment are primarily satisfied by the means discussed in § 59 – that is, especially by the discounting of bills, sales of securities, and the floating of loans abroad. Generally, these measures are successful in bringing the balance of payments into equilibrium and thus in protecting the reserves against the demands of foreign trade, just as the employment of bank money is successful in turning away the domestic demand for means of payment.

It is within the power of a central bank to accelerate and to strengthen these self-acting measures for correcting the balance of payments. This is accomplished by measures which, in this connection, are simply designated as “discount policy.” If the discount rate in Berlin is raised above the rate prevailing in similar foreign centres, foreign capitalists will, in normal conditions, willingly invest their money in Berlin for the time being. This may cause gold shipments to Berlin, but it generally is done through the purchase of claims falling due on Berlin. In this manner, payment obligations are transferred to the future and the German balance of payments is improved for the moment. Germany will also discount bills drawn on foreign centres at a lower rate, and by means of this anticipation of claims will create credits for the temporary relief of the balance of payments. Or, in order to avoid the high German discount rate, bills are sent by Germany to abroad *en pension*, and this is synonymous with the taking up of a short-period loan. The high discount rate, and the resulting high rate for contango loans, has a depressing effect on the Berlin Bourse, thus causing sales of securities to abroad, and this again relieves the German balance of payments. The methods may differ greatly, but the crux of the matter remains the same: the high interest rate attracts capital and thereby improves the balance of payments.

We must note, however, that this discount policy, which we may perhaps term “external discount policy,” bears a character quite different from the discount policy of a central bank which regulates the value of the money of the country, as we have already



seen (§ 48). According to the simplifying assumptions which we have just made, the latter kind of discount policy is completely controlled by the endeavour to keep the price-level constant. This does not prevent irregularities arising in the external balance of payments, which may thus cause the central bank to pursue a discount policy with special reference to the situation of the balance of payments at that moment. But thereby the bank runs counter to its fundamental discount policy of regulating the value of money, and, as a rule, this policy, as well as the capital market, has to suffer from the new objectives imposed on the discount policy. The external "discount policy" thus signifies a disturbance in the proper and central discount policy.

The external discount policy by its very nature is a differential discount policy, which primarily has to take account of the differences in the discount rates of the various money centres. If Berlin raises its rate in order to attract money, London will often be forced to adopt a counter-measure and to raise its discount rate also. As a result, the discounting of sterling bills in London is made more difficult, and the transfer of money from London to Berlin is hindered. If London raises its discount rate above that of Berlin, the latter will be quickly compelled to raise its rate once again. In this way there takes place a kind of race, and in the process the discount rate may be forced up considerably higher than is necessary from the point of view of regulating the internal value of money. Nevertheless, it must be borne in mind that such increases in the discount rates, if they occur in times of trade booms, hardly go too far, as the general price-level in any case is not prevented from undergoing what is often an excessive rise. On the other hand, in times of crisis a feverish raising of the discount rates, under the pressure of international competition, in order to obtain gold is hardly reconcilable with a rational monetary policy.

The disadvantages of frequent and violent fluctuations in the discount rate, arising from the "external" discount policy, have resulted in the formulation of a policy which, instead of raising the discount rate, seeks to protect the gold reserves of the banks by releasing gold for export only on payment of a premium. This

"gold-premium policy," although the pure gold standard is maintained, is often carried so far that the price of gold is driven up to the highest limit allowed by the currency regulations. The gold-premium policy can go still further in countries having a "limping" or otherwise imperfect gold standard. As soon as a gold-premium policy is introduced, the rates of exchange on abroad may exceed the normal gold points. Thus the gold-premium policy results in fluctuating exchanges instead of fluctuating discount rates, and it may be disputed which of the two alternatives is the lesser evil. In the one case trade has to put up with a discount rate which is justified neither by the situation of the capital market nor from the point of view of regulating the supply of money, and in the other case there arises a depreciation of the currency with a temporary abandonment of the rigid gold standard. The best policy is of course to avoid both.

Assuming that a country always charges a constant premium on gold, this measure has essentially only the significance of a reduction of the gold parity of the currency, and there is no reason why this reduction could not just as well be carried through directly. Such a premium on gold has as little effect on the balance of payments as it has for protecting the gold reserves.

In order to avoid an unnecessary aggravation of the international competition for gold, with the resulting injurious disturbance of the internal discount policy, occasional inequalities in the international balance of payments should be settled for preference without gold shipments. This may be rendered possible to a certain extent if every country keeps a reserve of short-term claims on abroad. In the last resort, it is a question of being able to mobilise international credit quickly when necessary. This is once more a question of the effective organisation of the international capital market, and of the maintenance of economic and political confidence.



**BOOK IV**

**THE THEORY OF TRADE CYCLES**



## CHAPTER XIII

### INTRODUCTION

#### § 62 *The Nature of the Problem*

IN the first two books of this work we have ignored, as far as we could, the possibility of change in the economy. To show as clearly as possible the simplest theoretical principles, we first of all considered the stationary State and then introduced the concept of the uniformly progressive economy, which allowed us to study the simplest and most important kind of change. In all these inquiries a strictly deductive procedure was necessary, for we were dealing with imaginary pictures having no exact counterpart in reality. If we wish to approach a step nearer to reality, the deductive method must be replaced by an inductive one. So we have to see how far the actual economic development diverges from the previously assumed uniformity of progress. Such divergencies can, of course, only be established by a study of the actual facts.

The divergencies which are most noticeable and, at the same time, which show the greatest regularity, are the so-called trade cycles. The study of these movements will form the subject of Book IV.

Out of all the phenomena of trade cycles it is but natural that most attention has been drawn to the crises. The public finds a dramatic element in them which attracts interest. For the business world, the crisis is the period of danger, of great losses, and of ruin, and science, too, has particularly devoted itself to the study of these crises. Economists have specialised in theories concerning crises, and have attempted, by means of a mass of historical material, to establish the characteristic features of crises, and to gain some knowledge of their causes and effects by comparing the peculiar phenomena of the crisis with incidents of the boom and depression periods. This method has certainly not been unfruitful, but from its very nature it is bound to pay attention chiefly to those external

characteristics of crises which seem to be most interesting, and which thus have a greater objective importance from the point of view of the business world or of a more or less predetermined scientific theory. A really systematic and impartial study is hardly possible in such circumstances, or is at least made considerably more difficult.

We shall adopt a different method here. We shall not study crises as isolated phenomena, but shall consider the trade cycle as a whole, as a single continuous movement of the national economy. Thus our attention will not be mainly directed to a few arbitrarily chosen phenomena. Instead, we shall systematically investigate the real changes which the economy undergoes in the boom and depression periods. This systematic study of economic movement will gradually afford us a deeper insight into the nature of trade cycles and of the causal connection between the different factors which are responsible for the cyclical movements in the economy, and which are in turn affected by them. In this way the study of trade cycles will lead to the consideration of the dynamics of the economy, which will serve as the necessary supplement to our earlier treatment of economic life as a static phenomenon or a uniform development.

In our study of the fluctuations in economic activity under the influence of trade cycles, we shall, as far as possible, go from the concrete to the abstract. We shall therefore, consider first the changes in material production and the accompanying changes in the factors of production. We shall then pass over to the fluctuations in prices and income, and shall conclude with a study of the changes in the condition of the capital market. At every stage we shall try, as far as possible, to establish the actual incidents statistically, so as to bring to light the reciprocal action of the various lines of movement and reveal the inner connection. It is evident that, in such a treatment, the graphic method can be of great service, especially when a comparison of two different movements is made.

It is clearly an advantage to be able to follow the lines of development of economic activity for as long a period as possible. Only a curve which includes a series of cyclical changes can give us a satisfactory picture of the way in which these changes act upon a certain

factor, and only a comparison between two such curves enables us to obtain a more or less definite insight into the reciprocity or parallelism of different factors.

However, a study of this kind, which is to be valid for the whole of Western Europe, cannot, in general, go back further than the beginning of the 'seventies. Such a limit is fixed by the nature of the available statistical material. There are, however, also deeper grounds for it; only since that time has there developed a world economy of so uniform a kind that it is possible to regard it as an entity. Only since that time have the older types of economy generally and definitely been surmounted and replaced by the modern exchange economy, with its division of labour and its "capitalistic" methods of production and transport. From that time onward, certain old forms and causes of crises seem to have been mainly overcome, and the modern type of crisis and of boom and slump periods, with all their characteristic features, have emerged.

Crises, in the general sense of violent disturbances of economic activity, may be of very different kinds. Historically, they appear chiefly in connection with great economic revolutions or new organisations and conditions, the proper handling and control of which man must learn from long experience. Thus, for instance, the development of the monetary system led to innumerable crises which may be traced to the misconceptions as to the use of coinage or the issue of notes. Further crises arose through the misuse of credit, perhaps especially of State credit or of special instruments of credit such as bills of exchange. The widespread opportunities of speculation afforded by the stock exchanges or the newly arisen limited companies were at first subject to many abuses, and these caused the most violent crises. The extension of the sphere of European trade to the whole world involved such an alteration of existing economic conditions as to lead to many crises before the business world had really grasped the new conditions of trade and adjusted itself to them. The beginning of exportation from Europe to the colonies was characterised by an absolutely astonishing lack of knowledge of the needs and purchasing power of distant parts of the world. This fact, together with the slowness of



means of communication was responsible for the series of great commercial crises both in the eighteenth and in the first half of the nineteenth centuries. Revolutions in the conditions of importation of commodities from abroad also resulted in crises, the most important and best known of which was that of European agriculture at the close of the nineteenth century. It is but natural that the great modern changes in the technique of production could not take place without serious disturbances, especially in a number of trades which underwent the change from manual labour to machine production.

Besides these circumstances, there are also series of smaller, and less important, disturbances of economic life to be taken into account as causes of crises. They can generally be traced back to an occasional scarcity or surplus of commodities, and arise, for instance, from very good or very bad harvests, or during a period when the scarcity of raw material is of such a nature as to bring industry to a standstill, or on account of changes of fashion which make stocks of goods unsaleable, and so on. Finally, war must also be included among the general causes of economic crises.

It is at once evident that no general or single theory is valid for so varying and varied a phenomenon as crises, in the sense in which we have here described them. What we wish to study in this Book is not the generality of possible disturbances of economic life, but, as we have suggested, the general up and down movement of economic activity, particularly the features it has presented since 1870. Since that time, many of the older causes of crises have ceased to be active. The crises which fall within that period have to some extent a common character, and they are in the main an outcome of the causes which are responsible for the ordinary and increasingly interdependent fluctuations of economic activity; the more casual conditions which generally gave rise to the older crises, however, disappear more and more into the background. The careful observer of the economic history of the nineteenth century cannot fail to recognise a gradual change in the type of phenomenon we call a crisis. Not until the 'seventies, however, did this change proceed so far as to show clearly the new type of

crisis and trade cycle. On this ground, there are objections to theories of modern trade cycles which are based too much on material from the history of the earlier crises, and it is quite justifiable to limit our inquiries to the period after 1870.

Of course, there are, in this limited period, certain casual disturbances of the kind we have mentioned, although, as we have said, many of the causes of earlier crises are now effective in only a small degree. But as we are here directing our attention to the larger up and down movements of the world economy, we ignore, as far as possible, all casual and small disturbances, all that are local in their effects, and all that are confined to particular industries.

We cannot overlook the fact that the period under consideration also represents one of transition which involved far-reaching economic changes. That period saw the end of the old self-sufficing agricultural economy, and the perfection of production based on division of labour and the system of exchange connected with it. It is only to be expected that a revolution of this character should entail great economic disturbances. So all views of modern fluctuations and crises as necessary concomitants of the modern productive and social order are on that account premature. Theory must not start with the assumption that it must find the complete and conclusive explanation of the movements in question in the nature of the economic order which we have attained, but must pay attention to the importance of the transition to this order. We are still in a period of transition, and must wait to see what effect the end of the transition period will have upon the movements in question. The old belief that crises were progressively more devastating in their effects is, at all events, now obsolete. In the most progressive and economically best educated countries, where some of the worst of the earlier causes of crises (as, for instance, an unsound bank-note policy) have been overcome, the available material points rather to a weakening of crises. Consequently, we must at present leave open the question of how far the great economic fluctuations which we are to consider are connected with the revolution in the social and economic system – a revolution in itself unique – and how far we should expect a decrease in their strength at the close of it.

In the main, I leave these observations as they were drawn up before the war. It is undoubted that the World War means an interruption of the economic cyclical movements which we are about to study in this Book. The economic development of post-war times has been so strikingly dominated by great monetary disturbances that trade cycles of the earlier kind are no longer applicable. Also, other extraordinary disturbing factors, such as the political insecurity, the burden of war debts, and the universal return to a protectionist commercial policy, as well as the increasingly monopolistic character of labour organisations in the sheltered industries,<sup>1</sup> and the State maintenance of the unemployed, have introduced into the economic life of the post-war period a very marked element of instability. A satisfactory study of the economic history of the last decade must be primarily directed to the explanation of these disturbing factors. Not until this has been achieved, and – we may assert this – not until we have, on the basis of such an analysis, in the main surmounted these disturbances, shall we again be confronted by the question of how far the term trade cycles in the sense of this Book is still valid, and what significance they still have for economic life.

At present, there is a prevailing belief, especially in the so-called *Konjunkturinstituten*, that everything that occurs in economic life is determined by mathematical curves, and that we have only to discover these to be able to learn our predetermined fate. This modern Western form of an ancient Eastern fatalism must be fought and overcome. The study of the disturbances which prevent a uniform development of economic life must always be directed to the discovery of these disturbances, and must follow the practical aim of suppressing them as much as possible. From this point of view, the study of the cyclical fluctuations during the period 1870–1914 is very instructive. We shall find that these fluctuations have no absolute necessity, but are to a great extent caused by factors which represent passing phenomena of economic history, or which may be, if not eliminated, at least to a great extent controlled.

<sup>1</sup> Cf. Cassel, *Recent Monopolistic Tendencies in Industry and Trade*, Geneva, League of Nations, 1927.

Before we pass on to the study of the movements of economic activity under the influence of trade cycles, we must come to an agreement as to the chronology of these fluctuations – that is, we must decide in which years the trade cycles changed from a period of increasing activity to one of depression. In such a decision no

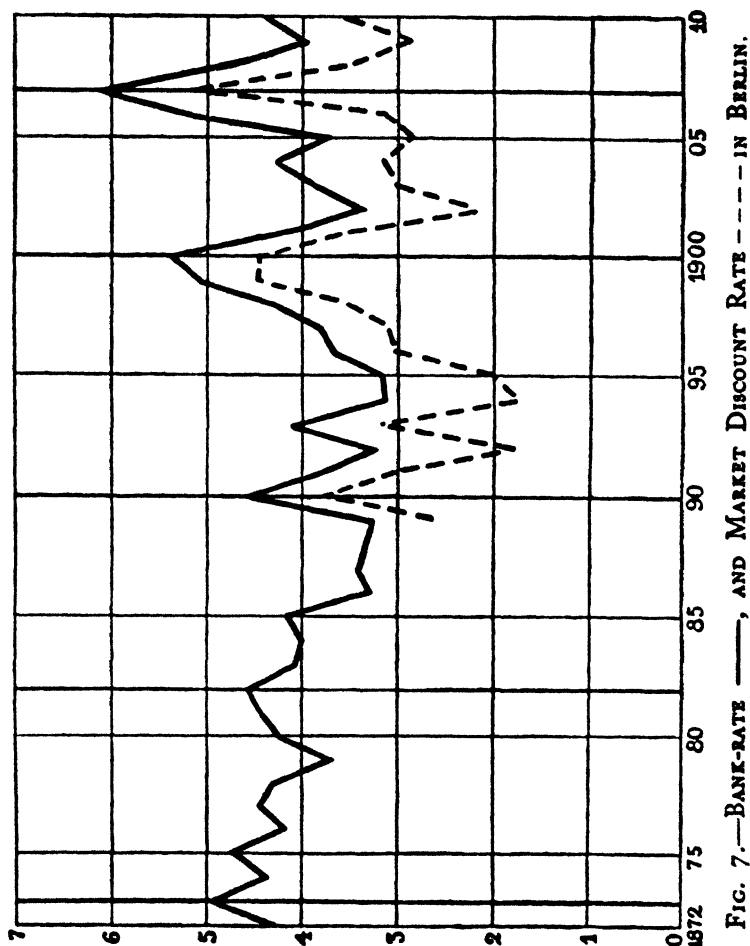


FIG. 7.—BANK-RATE —, AND MARKET DISCOUNT RATE ---- IN BERLIN.

*a priori* position is taken up in regard to our problem. The assignment of a point of time to which we have to trace back economic changes is really a question of terminology. In deciding the question, we must only lay stress on our determination to keep as closely

as possible to what is generally recognised. Fortunately, there is no difference of opinion on that point. In what follows we shall take 1873, 1882, 1890, 1900, and 1907 as years of crisis, or, in order to emphasise the change from advance to decline, "transition

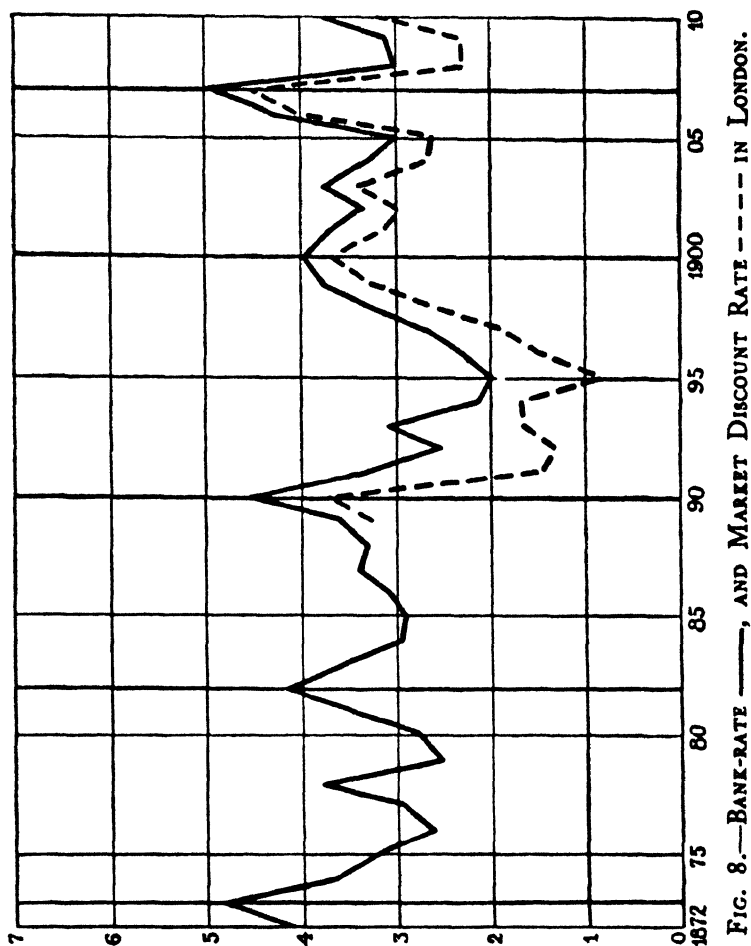


FIG. 8.—BANK-RATE ———, AND MARKET DISCOUNT RATE - - - - IN LONDON.

years." In our diagrams, we shall indicate these years, following Lucien March in the *Bulletin de la Statistique Générale de la France*,<sup>1</sup> by thick vertical lines, which we may call "transition lines."

<sup>1</sup> Vol. I., Paris, 1911-12.

In thus determining the crisis years, we must, however, note that in different countries there may be differences in the dates at which the crises occur. The differences are only of material importance in the case of the United States, where the crises of 1890 and 1900 were delayed until 1893 and 1903 respectively.

Although this chronology is generally accepted, it might not be out of place to justify this acceptance. If we define the crisis as a time of general inability to meet obligations which fall due, we must take, as the first external sign of the crisis, an extraordinary tension of the money market, and so a tightening of the rates for short-period loans, especially the discount rates. The statistics of the discount rates show infallibly that the maxima of these rates always occur in the crisis years we have enumerated. The simplest way to convince ourselves of this is to glance at the diagrams (Figs. 7 and 8), in which the continuous line represents the bank-rate, and the dotted line the market discount rate, for Berlin and London.<sup>1</sup>

The closer study of the relation between trade cycles and discount rates properly belongs to a later stage of our inquiry. Here we need only note that the extraordinary tension in the money market which is always connected with the idea of a crisis did actually occur in each of the crisis years we have enumerated.

<sup>1</sup> The figures on which the diagram is based are given in Table IV. in the Appendix.

## CHAPTER XIV

# THE INFLUENCE OF TRADE CYCLES ON PRODUCTION

### § 63 *The Chief Branches of Production during Trade Cycles*

WE now pass on to the study of those changes in economic production which appear during the various phases of a trade cycle. For this purpose we must divide productive activity into its main branches and observe the particular effect of trade cycles on the different kinds of production.

Production, as we know, falls into two main branches – the production of fixed capital and the production of goods which pass directly into consumption. In both cases, there is, as an intermediate stage in the process, the production of materials, semi-manufactured goods, and those things actually used in the productive process. These materials and semi-manufactured products, such as pig-iron and rails, cotton and cotton-yarns, and material like coal for providing power, which we have put together under the head of “circulating capital,” are, so to say, only symptoms of the continuous productive process which finds its technical goal in the creation of fixed capital or of a commodity that passes into the consumption system. We may therefore assume that the production of circulating capital orientates itself to one or the other main branch of production, at least in the first place, according to the volume of this branch. So in our study of the influence of trade cycles on production, we have only to distinguish between the production of fixed capital and that of goods which pass directly into consumption. For the sake of brevity, we shall call these two branches of production “production of capital” and “production of consumption goods.” As to the extent of each kind, the production of certain kinds of circulating capital will, as we shall soon see, be our best measure.

Let us consider the production of capital first. The most important fixed capital in the modern community consists, as we have seen, of buildings and railways. Hence, if we wish to ascertain the direct influence of trade cycles upon the production of capital, we must examine the statistical data of the construction of houses and railways.

In the case of houses we have, for the United States, statistics of the sums devoted annually to building in the fifty-two chief cities. The figures are for calendar years, in millions of dollars.<sup>1</sup>

| <i>Year.</i> |    |    | <i>\$ mill.</i> | <i>Year.</i> |    |    | <i>\$ mill.</i> |
|--------------|----|----|-----------------|--------------|----|----|-----------------|
| 1904         | .. | .. | 469             | 1909         | .. | .. | 772             |
| 1905         | .. | .. | 645             | 1910         | .. | .. | 726             |
| 1906         | .. | .. | 679             | 1911         | .. | .. | 688             |
| 1907         | .. | .. | 646             | 1912         | .. | .. | 739             |
| 1908         | .. | .. | 566             | 1913         | .. | .. | 660             |

The figure for 1907 is increased by \$20,000,000 through the inclusion of three new cities in the statistics. But it is clear from the table that there was a great increase in building in the years preceding 1907. The maximum year is the one before the crisis year of 1907. During the following depression the amount of building decreased rapidly. In a single year the sums invested fell by \$80,000,000, or 12 per cent. of the amount that had been reached in 1907.

During the following year, when, in the United States, there was an advance as sudden as it was brief, the amount invested in building rose by no less than \$106,000,000. With the next two years came a severe reaction. However, a new maximum was reached in 1912, once more in the year before the transition year of the trade cycle of 1913. The upward movement is therefore characterised by an increase in building activity, and the depression by a decrease. The peak of production is reached a little before the end of the upward movement.

A similar effect of trade cycles upon building activity can also be traced in the case of Germany. The volume of memoranda to the Imperial Finance Reform of 1908 gives *statistics of the amounts*

<sup>1</sup> *Statistical Abstract of the United States.*



*insured in the public fire insurance companies with compulsory rights.*<sup>1</sup> (The figures are given, abbreviated, in millions of marks.) The changes in these figures from year to year may give us a general idea of the changes in the rate of building.<sup>2</sup> It can be seen that the increase in the amounts of insurance reached a pronounced peak in 1882, 1891, 1901, and 1904, and that, consequently, the highest points almost coincide with those of the boom periods. In some cases, however, the peak is a year late; this means that a brisk trade in the building industry in one year is only shown in a corresponding increase in the insurance figures in the following year. The maximum of the year 1904 points to a special advance outside the broad general trade cycle.

| <i>Year.</i> | <i>Amounts of Insurance.</i> | <i>Year.</i> | <i>Amounts of Insurance.</i> |
|--------------|------------------------------|--------------|------------------------------|
| 1875         | 14,281                       | 1891         | 22,742                       |
| 1876         | 15,135                       | 1892         | 23,120                       |
| 1877         | 15,756                       | 1893         | 23,836                       |
| 1878         | 15,696                       | 1894         | 24,572                       |
| 1879         | 16,079                       | 1895         | 25,275                       |
| 1880         | 16,293                       | 1896         | 25,639                       |
| 1881         | 16,681                       | 1897         | 26,500                       |
| 1882         | 17,983                       | 1898         | 27,529                       |
| 1883         | 17,478                       | 1899         | 28,520                       |
| 1884         | 17,868                       | 1900         | 29,349                       |
| 1885         | 18,314                       | 1901         | 30,780                       |
| 1886         | 18,719                       | 1902         | 32,123                       |
| 1887         | 19,487                       | 1903         | 33,667                       |
| 1888         | 20,151                       | 1904         | 35,414                       |
| 1889         | 20,855                       | 1905         | 36,792                       |
| 1890         | 21,445                       | 1906         | 37,209                       |

The extent of railway construction has long been regarded as a good measure of trade cycles. But it is unmistakable that the economic character of railway building in the most advanced countries of Western civilisation has changed to some extent. To-day, the centre of interest in these countries lies in increasing the transport

<sup>1</sup> *Reichstag*, 12 Legislatur Periode, I. Session, 1907-9, Nr. 1,043, Teil III., "Materialien zur Beurteilung der Wohlstandsentwicklung Deutschlands im letzten Menschenalter," p. 35.

<sup>2</sup> The average percentage growth of the amounts of insurance in the thirty-year period 1876-1906, is 3.05. This figure agrees with the percentage of the general economic progress which we have found to be characteristic of the period.

capacity of the old lines, rather than in constructing new ones. This change seems to have considerably decreased the effect of trade cycles upon this type of construction.

Special interest lies in the development of railway construction in the United States.<sup>1</sup> Since the middle of the nineteenth century the history of railway construction in that country has also been the history of crises. Construction in the 'fifties, which reached its peak with 3,642 miles of new lines in 1856, was retarded by the crisis of 1857, and sank annually, reaching its lowest point (660 miles) in 1861. With the close of the 'sixties, the building of railways became active again. In 1871 the newly opened lines rose to 7,379 miles. From this peak, there was a decline until 1873, when a little over 4,000 miles of new lines were opened. For 1875 the figure had dropped to 1,741 miles. At the close of the 'seventies and the beginning of the 'eighties, railway construction increased, until, in 1882, the enormous figure of 11,569 miles was reached, followed by a drop to 2,975 miles in 1885. These figures show very clearly the relation between railway construction and trade cycles. The boom periods are characterised by unusual activity, which attains its maximum point in or just before the crisis year. But, on the other hand, in what we have called the slump periods, railway construction falls to a minimum.

After the depression in the middle of the 'eighties, there was a great increase in railway building in the United States, culminating in a total of 12,876 miles in 1887, and continuing with a considerable amount of new construction until 1893. With the 'nineties, however, the increase of the transport capacity of the old systems seemed to gain considerably in importance compared with the opening of new lines. The statistics published by the Interstate Commerce Commission of railways opened since 1890 give us some insight into this development.<sup>1</sup> These statistics give the total length of tracks laid down, and the figures are given separately for the first, second, third, and fourth tracks and for station tracks. The annual increase (in thousands of miles) of the total length of

<sup>1</sup> *Statistical Abstract of the United States.*

tracks for each of the years 1891 to 1907 is, on this material, as follows (fiscal year to June 30th):

| <i>Year.</i> | <i>Thousand Miles.</i> | <i>Year.</i> | <i>Thousand Miles.</i> |
|--------------|------------------------|--------------|------------------------|
| 1891         | 7.6                    | 1901         | 6.6                    |
| 1892         | 3.6                    | 1902         | 8.8                    |
| 1893         | 10.8                   | 1903         | 9.6                    |
| 1894         | 7.9                    | 1904         | 13.3                   |
| 1895         | 3.5                    | 1905         | 9.7                    |
| 1896         | 5.9                    | 1906         | 10.3                   |
| 1897         | 2.9                    | 1907         | 10.9                   |
| 1898         | 3.3                    | 1908         | 5.7                    |
| 1899         | 4.8                    | 1909         | 8.7                    |
| 1900         | 8.6                    | 1910         | 9.4                    |

It must not be forgotten that the years given in the figures end on June 30th for each year. It then appears that the three boom years which end in the crises of 1893, 1903, and 1907 are characterised by a great increase in length of tracks, while the slump periods after the crises are just as clearly marked by a reverse movement. In the period covered by our statistics, the length of the first track has fallen much below half of the total length, so that the additional and station tracks surpass it. Thus, for example, the length added to the first track in 1907 amounted to only 5,100 miles, while the addition to the others was 5,800 miles. This shows that statistics which refer only to the length of the newly built first line are not sufficient for testing the effect of trade cycles upon railway construction.

The new character of railway construction appears not only in the extended demand for additional tracks, but also in the general development of the old systems, by which the gradient of the lines is improved, sharp curves abolished, and wooden bridges and viaducts replaced by steel. The annual reconstruction of bridges and viaducts alone must be reckoned in miles in the case of the larger systems. All this work was evidently necessitated by the great increase of traffic. It has, consequently, much less of a speculative character than the building of railways in earlier times, when the object was primarily to open up new districts as rapidly as possible. It is therefore justifiable to assume that the change in the character

of railway construction that has taken place will gradually decrease the influence of trade cycles upon the sphere of production we are now considering.

In a country like England, railway building has certainly not yet come to a standstill, but the development is less marked than formerly. The annual increase of paid-up capital of the English railways is now often less<sup>1</sup> than 1 per cent. of the whole, and in the period 1901-11 it never exceeded 2 per cent. The fluctuations from year to year show no striking connection with the movements of trade cycles. In earlier periods, however, railway construction in England is very significant in connection with the study of trade cycles.

In many new countries, railway construction has, of course, the same character as it had during the earlier period in our older countries. Hence statistics giving in kilometres the length of new lines opened throughout the world do not convey an accurate idea of the importance of railway construction. This becomes still clearer if we bear in mind how much the cost of construction per kilometre varies in different countries. A general account of the influence of trade cycles upon railway construction is thus made very difficult.

While, therefore, we can demonstrate that trade cycles have a definite influence upon the building of houses and railways, even in the sense that the production of capital in these branches increases during a boom period and decreases during the depression which follows, this result is still obtained from isolated observations which are possibly not representative, in the selection of which different conditions cannot all equally be taken into account, and which, above all, provide no measure of the influence of trade cycles. We must rather try to find a type of production which can represent the entire production of fixed capital, which gives a quantitative reflection of the fluctuations in the production of capital, and from the variations in which we can deduce corresponding variations in the production of capital. To attain this, we must

<sup>1</sup> "Paid-up Capital of Railway Companies" (*Statistical Abstract for the United Kingdom*).

turn from the production of definite concrete capital goods, and direct our attention to the materials which are generally used in such production.

If we therefore ask ourselves what, in the modern economy, are the most important materials embodied in fixed capital, we easily find that among these iron, wood, and stone (including bricks and cement) are of the greatest significance. Of these, again, iron undoubtedly takes the first place. Modern technical development has given it this paramount importance as material for fixed capital. In earlier times, it was mainly used for making tools. Technical advances in its manufacture made it possible, by the first half of the nineteenth century, to use it for building purposes, but it was not until the Bessemer, Siemens-Martin, and Thomas processes were introduced that the economy entered upon the "iron age" in the modern technical sense. From the 'seventies onward, it was used to an increasing extent for construction of all conceivable kinds. It is now the chief material not only for railways, in which it is used for bridges, viaducts, stations, and rolling stock, but also for ships, not excepting sailing vessels, buildings, factories, and even houses. Since, through the Thomas process, it is possible to produce iron girders cheaply, it has been used considerably in the building of houses. Even a small house can hardly be built nowadays without the use of iron girders. Then there is also the extensive use of iron for pipes, either in the house itself or in the streets leading to it. When we consider all the uses of iron, we see clearly that it is not only unequivocally the most important material of fixed capital, but is so generally used as such that the consumption of it is a very good measure of the entire production of fixed capital. It might be objected that a certain amount of iron is used in the manufacture of consumption goods, but if we calculate the consumption of iron not in value but in tons, the quantity that is used for making razors, skates, etc., is insignificant, and need not be considered. The annual production of iron may therefore be taken as a measure of the annual production of fixed capital.

Iron assumes a great variety of forms. In practice, however, all

iron, at least under pre-war technical conditions, passes through the stage of pig-iron. Here the statistics of the production of pig-iron afford the measure we need of the total production of capital. The statistics have the further advantage of including fairly reliable

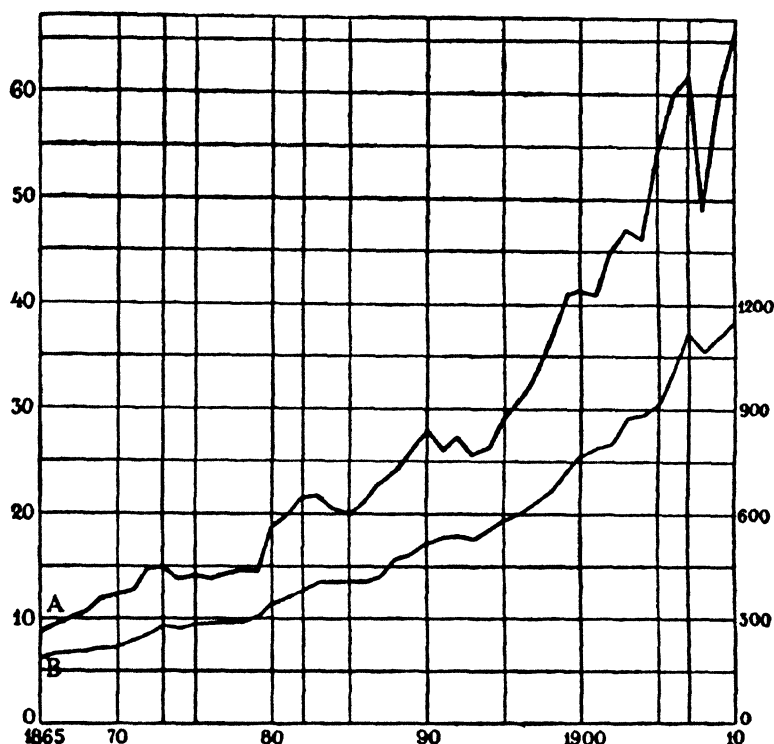


FIG. 9.—WORLD PRODUCTION OF PIG-IRON (A) AND COAL (B) IN MILLION TONS.

figures covering the whole world, and thus enable us to construct a curve that reflects the world production of fixed capital.

In our diagram (Fig. 9)<sup>1</sup> the world production in pig-iron is represented by curve *A*. A glance at this curve shows that its highest points regularly coincide with the turning points of the

<sup>1</sup> The numbers on the left of the diagram represent the world production of pig-iron in millions of tons. The statistical data on which the curve is based are reproduced in Table V. of the Appendix.

trade cycles; in other words, that the maxima of iron production occur at the busiest periods of the trade booms. Before each line marking the turning point in the cycle, there is a considerable increase in the output of iron, and, after it, a fairly regular diminution of output. And as the production of iron represents the entire production of fixed capital, we see that there is a special increase in capital-production before each turning point, a decline afterwards. This justifies our use of the terms "periods of boom and depression." We may now define, with precision, these conceptions. *A period of boom is one of special increase in the production of fixed capital; a period of decline or a depression is one in which this production falls below the point it had previously reached.*

Altogether, the production of pig-iron in the period 1865-1910 rose from some 9 million tons to about 66 million tons, which means an average annual increase of 4.5 per cent. The increases in the periods of increasing trade activity amount to as much as 30 and even 40 per cent. The decline in the periods of depression is usually smaller, and remains as a rule below 10 per cent.; only for 1908 does it reach about 20 per cent.

It may thus be considered as definite that trade cycles influence the production of fixed capital, and the way in which they do so is clear. It is not, however, sufficient to know the effect of trade cycles; we must know also whether their effects on other production are identical or different, perhaps contrary. It remains for us, therefore, to investigate how the production of commodities which pass immediately into consumption behaves in the various trade cycles. We might attempt to select various commodities and subject them to such an examination. But this method would, to a large extent, expose us to the danger of our choice depending too much on coincidences, and consequently our conclusions concerning the dependence of the output of consumption goods on trade cycles would not be convincing enough. In this case, too, it is essential to select one individual article to represent the entire production.

Before we proceed on these lines, we must remember that one large field of production for consumption is excluded from the outset, namely, the whole of agricultural production. In the case

of agriculture, weather conditions play the leading part. Agricultural production fluctuates with the harvests and shows no direct connection with the movements of trade cycles.

Excluding, therefore, all agricultural production, we have, in the case of the remaining production, a commodity of such universal importance that it can be employed as a measure of production. This commodity is coal. Coal, it is true, is used to a great extent for the production of fixed capital, and the curve of the coal output will not supply us with an individual picture of the production of consumption goods, but a comparison of this curve with that for pig-iron will nevertheless be instructive. Coal is used not only for actual material processes of production, but also for the immediate satisfaction of definite needs, such as the heating and lighting of our houses, and passenger-transport on train and tram. From our point of view, this is an advantage, since the coal output thus becomes a measure for the great sphere of production to satisfy immediate immaterial requirements. In our diagram (Fig. 9) the world production of coal is represented by the curve *B*, which gives the production in millions of tons (numbers on the right).

This curve represents regular increases for the boom periods, but, in general, no decreases or only insignificant decreases in periods of depression. As is immediately observed, it has, on the whole, a far more regular course than the pig-iron curve. The influence of trade cycles is suspected, but it is extremely probable that this influence would disappear, or, at least, be partly neutralised if we could deduct the coal output which is employed for the production of pig-iron and the whole allied iron industry. We seem, therefore, justified in our conclusion that the coal output which is used in the production of consumption goods really grows steadily and shows no dependence on trade cycles. The only really important decline in the coal output is to be found in 1907. It is, however, obvious that the decline is essentially to be ascribed to the huge decline in the pig-iron output for the same year, and that, therefore, the coal output for purposes other than the iron industry was practically unaffected even by the boom in 1907 and the subsequent depression.



The comparison between our two production curves thus leads us to the conclusion that trade cycles have a marked influence on the production of pig-iron, but that, in the case of coal which is employed in the production of goods for consumption, a similar influence is almost non-existent. This result can, after what we have said concerning the significance of our curves, be further taken as indicating that, while the production of fixed capital depends essentially on trade cycles, *the production of consumption goods shows no marked dependence on trade cycles. This means that the alternation between periods of boom and slump is fundamentally a variation in the production of fixed capital, but has no direct connection with the rest of production.*

This statement is obviously of such vital importance for the whole theory of cyclical fluctuations that we must not fail to test it by all the means at our disposal. First, we are going to draw our comparison between the output of pig-iron and that of coal in a single country – Germany. The corresponding curves are reproduced in the diagram (Fig. 10)<sup>1</sup> As far as the production of pig-iron (curve *A*) is concerned, it shows, in the case of Germany, a relative advance which exceeds the corresponding increase in the world output. The periods of increasing trade activity are, therefore, very pronounced in the German production of pig-iron. Again, after the turning years of the trade cycles, 1873, 1900, and 1907, we find marked depressions. On the other hand, no decline takes place after 1890; after 1882, a decline is not found till 1886, and that is but an insignificant one. The coal curve runs very evenly on the whole, showing in fact only a few important declines, namely, 2.7 per cent. in 1876–7, 1.8 per cent. in 1891–2 and 1.5 per cent. in 1901–2. The comparison between the German coal and iron outputs may be looked upon as ample confirmation of our result.

In the United States, the fluctuations in the pig-iron output have, it is well known, been great for a long time past. From 1890 to 1894, for example, the production of pig-iron fell from 9.2 to 6.7 million tons. But the coal output of the United States has become

<sup>1</sup> Figures in Table V. of the Appendix.

steadier. In the period 1870-1907 it shows no decline of more than 9 per cent. In the year 1908, when the iron output fell 38 per cent. below that of 1907, an important decline in the coal output naturally took place, but even then only 13.4 per cent.<sup>1</sup>

It is natural that England must, on account of its large exports

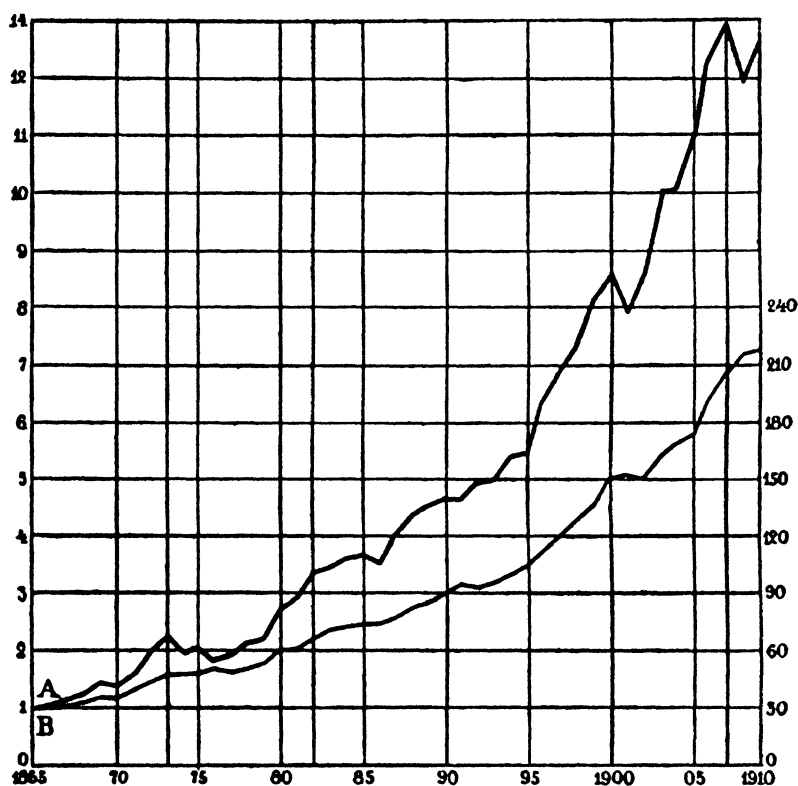


FIG. 10.—PRODUCTION IN GERMANY OF PIG-IRON (A) AND COAL (B) IN MILLION TONS.

of coal, show proportionately large fluctuations of output. The worst decline in coal production was from 1891 to 1893, and amounted to 11.4 per cent. The production of pig-iron had, however, fallen by 19.4 per cent. from 1889 to 1892. The decline of 18.3

<sup>1</sup>*Statistical Abstract of the United States.*

per cent. in pig-iron output from 1882 to 1886 is accompanied by a fall in the coal output of 3.8 per cent. from 1883 to 1886.

Now let us test our conclusion in another way. The statistics of the railway goods traffic in certain countries enable us to divide the total tonnage according to the classes of goods. We may make the division in such a way as to keep, on one side, the commodities which serve mainly as the material of fixed capital, and, on the other side, all the remaining commodities. For Germany, we have done this by including under one head cement, iron, wood, and stone (classes of goods 7, 11-20, 31 *a* and *b*, and 59 in the official statistics) as material of fixed capital. The tonnage for these is subtracted from the total tonnage of the goods conveyed. We thus get the tonnage of "capital goods" and "other goods" (see Table VI. in the Appendix). If we examine these statistics, which go back to 1886, we find the capital goods rising considerably until the year 1889, and no decline after the turning year 1890; a result that agrees with the German curve of pig-iron production. For the group "other goods" we notice a decline of 127,087 to 124,766 tons from 1891 to 1892, or about 1.8 per cent. For the period from 1885 to 1889 the development is shown on the diagram (Fig. 11). The lower continuous line represents the tonnage of "capital goods" in millions of tons. The upper dotted line shows in the same way the tonnage of the "other goods," but for convenience it has been lowered by 100. This latter curve indicates, as we see, no reaction, while the curve of capital goods has pronounced reactions after the turning years of the trade cycles, 1900 and 1907. The diagram therefore confirms the connection which we found to exist between the movements of the trade cycles and the production of fixed capital, and it also clarifies how much less the remaining production is influenced by trade cycles, although the group "other goods" is naturally not altogether free from fixed capital goods.

A similar investigation may be made for the United States.<sup>1</sup> We will consider only the trade booms of 1904 to 1907. We find an increase in the tonnage of goods traffic from 1,310 million to 1,796 million tons, or 37 per cent. Of the various classes of goods which

<sup>1</sup> *Statistical Abstract of the United States*. Note that the year ends at June 30th.

the statistics specify, those given in the following table show an increase above this average by the percentage stated:

| <i>Goods.</i>  | <i>Per Cent.</i> | <i>Goods.</i>           | <i>Per Cent.</i> |
|----------------|------------------|-------------------------|------------------|
| Coke .. ..     | 75%              | Machines, etc. ..       | 49%              |
| Ore .. ..      | 92%              | Iron bars and tin ..    | 76%              |
| Stone, etc. .. | 54%              | Cement, bricks and lime | 58%              |
| Rails .. ..    | 42%              | Coaches and tools ..    | 48%              |

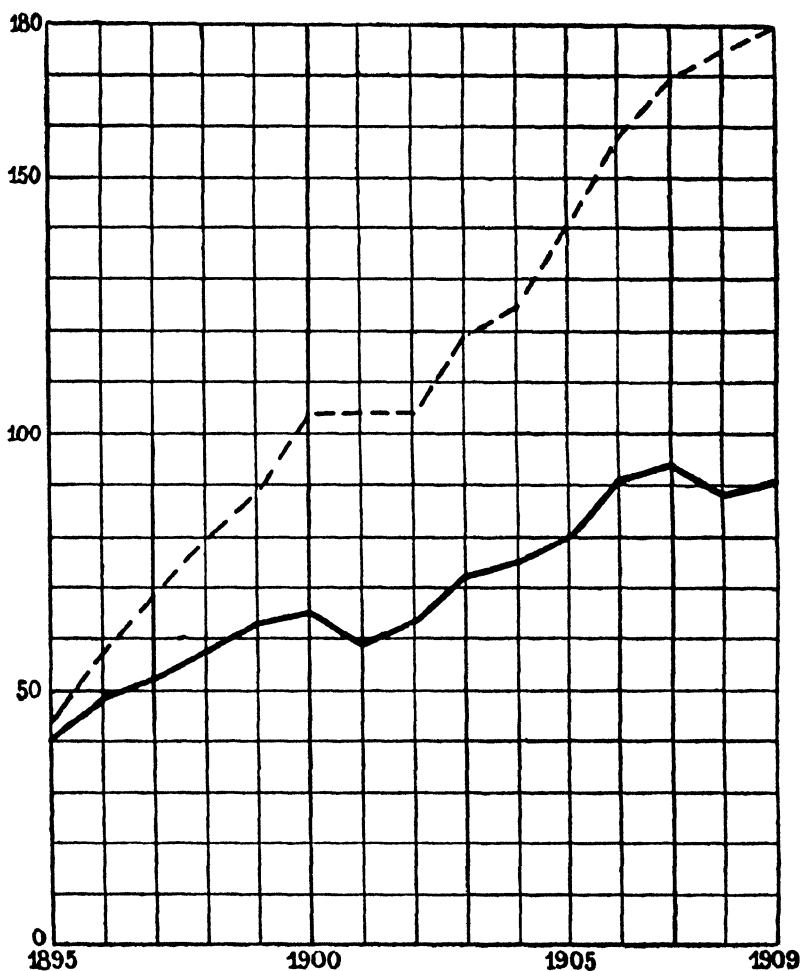


FIG. 11.—GOODS TRAFFIC ON GERMAN RAILWAYS, IN MILLIONS OF TONS.  
 ——— CAPITAL GOODS.    - - - - OTHER GOODS.

Below the average increase are the great groups of agricultural and animal products, with 21 and 9 per cent. respectively. For domestic and such-like articles the increase is 21 per cent. Sugar even decreased by 3.5 per cent. Unfortunately, we cannot follow the matter any further, as the statistics were changed in 1908. The figures quoted, however, confirm the fact that the rising period means a considerable increase in the production of capital goods, but the remaining production shows scarcely any advance beyond the normal.

Now that we have established that the production of fixed capital reflects the trade cycles in their periods of boom and depression, it remains to show as accurately as possible when the decline in production begins. The culminating point of a crisis can generally be determined with some precision. The question is whether capital production – and, firstly, the production of pig-iron – falls just at the highest point of the crisis, or a little earlier or later.

According to the data collected by Pohle,<sup>1</sup> the output of pig-iron in the German tariff area was, in thousands of tons:

| <i>Year.</i> |    |    |    |    |    | <i>Tons in 1000's</i> |
|--------------|----|----|----|----|----|-----------------------|
| 1906 .. .. . | .. | .. | .. | .. | .. | 12,422                |
| 1907 .. .. . | .. | .. | .. | .. | .. | 13,046                |
| 1908 .. .. . | .. | .. | .. | .. | .. | 11,814                |

Thus the annual statistics show no decline for the year of crisis. When we study the statistics for the individual months, we find that in 1907 the production for each month is higher than for the corresponding month of 1906. The output for January, 1908, is practically equal to that of the corresponding month in the previous year. For February, 1908, the output is higher than for February, 1907. Not until March is there a slight decline of some 52,000 tons, and in April there is a considerable drop (98,000 tons) as compared with the same month in the previous year. On the other hand, the daily output declines from as early as December, 1907. It is as follows:

<sup>1</sup> *Monatliche Übersichten über die allgemeine Wirtschaftslage* (Supplement to the *Zeitschrift für Sozialwissenschaft*).

| 1907.      |    |         | 1908.       |    |         |
|------------|----|---------|-------------|----|---------|
| September  | .. | .. 36.4 | January ..  | .. | .. 34.2 |
| October .. | .. | .. 36.7 | February .. | .. | .. 34.3 |
| November   | .. | .. 37.1 | March ..    | .. | .. 33.8 |
| December   | .. | .. 35.7 | April ..    | .. | .. 32.7 |

It is clear, then, that the decline in the output of pig-iron did not occur until some months after the crisis, which, as is well known, began in September.

In the United States, where the crisis originated and was also very acute, the decline in the production of pig-iron followed rather more rapidly on the crisis. The pig-iron production in thousands of gross tons per day came to 72.8 in September, 75.4 in October, 60.9 in November, 39.8 in December, and reached its minimum of 33.7 in January, 1908. As the crisis broke out in September and was very severe in October, even in the United States the decline in the production of pig-iron came somewhat later.

## CHAPTER XV

### THE INFLUENCE OF TRADE CYCLES ON LABOUR

#### § 64 *Changes in the Numbers of Workers in the two Chief Branches of Production*

IF the essential element of a trade cycle is the extraordinary production of fixed capital and the subsequent considerable decline in that production, these movements are bound to be reflected in changes in the number of workers employed in this production. If it is true that the trade cycles exert no material influence on the rest of production, this fact should come to light in a more uniform rise in the number of workers in these other industries. In this connection, the old question arises: Where do the industries producing capital goods obtain the additional labour which they need during the trade booms, and what happens to those workers whom the same industries are unable to employ during the depressions? We are obviously broaching here the whole subject of a general inquiry into the movements of labour under the influence of trade cycles.

Unfortunately, this point, important as it is for our knowledge of trade cycles, as well as from the general social point of view, does not appear to have been specially considered in official statistics. We can, however, get certain statistical data for some countries which throw considerable light on the phenomena under consideration.

In the case of Sweden, the official factory<sup>1</sup> statistics for each year give the number of workers divided into various groups of industries. We can therefore include here those groups of industries which in the main serve for the production of fixed capital and thus calculate the total number of workers employed in these industries. The industries in question are the timber, stone, and building material, and iron and steel industries. The total number of workers

<sup>1</sup> *Sveriges officiella Statistik D.*, "Fabriker och Handverk."

employed in these industries can be calculated from the available statistics for each year after 1896. This number is shown on the diagram (Fig. 12) by curve *A*. Curve *B* indicates the number of workers in other industries, and curve *C* the total number of industrial workers, or the sum of *A* and *B*.<sup>1</sup> Curve *C* shows, for the two turning years of the trade cycles, 1900 and 1907, the characteristic sharp points of a trade boom. When we examine the causes of these peaks we find that they are almost entirely due to fluctuations in the number of workers in the capital-producing industries. The curve of these industries shows very marked drops after both 1900 and 1907, while the curve of the other industries maintains its advance after 1900, though at a more moderate rate, and only falls a little after 1907. The fluctuations in the industries producing capital goods as shown by the curve are here expressed in figures:

| <i>Year.</i> | <i>Rise.</i> | <i>Year.</i> | <i>Fall.</i> |
|--------------|--------------|--------------|--------------|
| 1896-1900    | 29.5%        | 1900-1902    | 5.1%         |
| 1902-1907    | 12.9%        | 1907-1909    | 10.0%        |

Curve *B*, of the other industries, shows not a single fall before 1907, and in the great strike years of 1908-9 a fall, as against 1907, of only about 1,000 workers, or about 0.56 per cent.

Thus the conclusion at which we have already arrived, that the movements of the trade cycle are merely expressions of the fluctuations in the production of fixed capital, is fully borne out by the statistics of the number of workers in Swedish industries.

A similar study may be made in the case of Germany by examining the number of persons in the various trade associations who are insured against accident. The figures are given in the official reports of the Imperial Insurance Authorities in the *German Statistical Year-book* (*Statistisches Jahrbuch für das Deutsche Reich*).

Regarding the character of these figures we may quote the following remarks of the officials<sup>2</sup>: "The object of the returns is to give annually an approximate idea of the number of employees

<sup>1</sup> The figures are given in Appendix (Table VII.). Miners and foundry workers are not included among the industrial workers.

<sup>2</sup> *Official Reports of the Imperial Insurance Authorities*, 1902, p. 629, No. 4.



and workers who are covered by insurance against accident. It is, therefore, not a question here of average figures in the strict statistical sense. For this reason, we have not to work out an accurate mean of the number of insured employees and workers actually

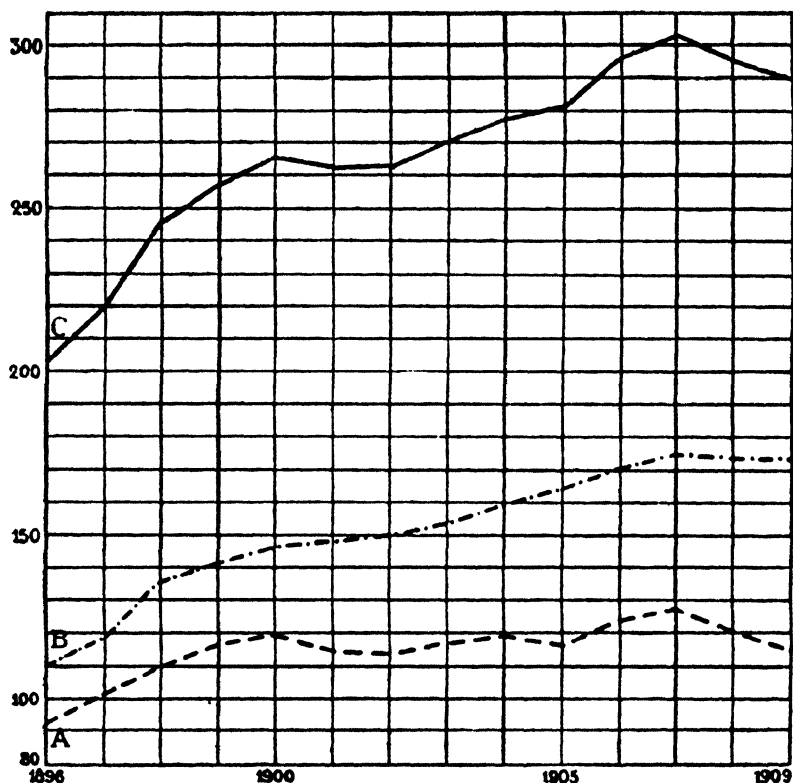


FIG. 12.—FACTORY WORKERS IN SWEDEN.  
A. CAPITAL-PRODUCING INDUSTRIES. B. OTHER INDUSTRIES.  
C. TOTAL INDUSTRIES.

engaged in the year above or below the number of regular workers, but have to give the number of persons which the trade has regularly kept in full or current (normal) occupation in the year of our calculation. A spinning mill, for instance, which needs to employ as a rule 200 (though sometimes more, sometimes less) insured

officials and workers daily to produce what is taken to be the normal daily output during the year in question will . . . be taken as employing 200 persons. . . . Moreover, the introduction of additional help to assist the average working staff for a short time is only left out of account if done every year. . . . Trade unions, which know the total number of days worked during the year, can ascertain the average number of insured by dividing the total number of working days on which, as a rule, work is done in the branch of industry in question."

This characteristic of the statistics of insured persons in the associations seems, on the whole, suitable for our purpose. We want really to know how the large movements of the trade cycle affect the number of employed workers from year to year, and not how the number varies from day to day.

In order to obtain an idea of the number of workers employed in the industries producing capital goods, we have to add together all the persons insured through the associations of the iron, steel, quarrying, brick-making, and building industries. By subtracting this sum from the total number of insured persons in the industrial unions, we arrive at the number of insured persons in the "other" trade unions.

This division of trade unions into "capital-producing" and "others" does not pretend to be accurate. For instance, the iron and steel industry produces some goods which cannot be reckoned as fixed capital. On the other hand, there are among the "other" industries several which produce, to a greater or less extent, fixed capital or the materials therefor. Among such may be mentioned the mining, fine engineering, electrical, chemical, and smelting industries. But for our present purpose it is sufficient to be able to separate the great mass of the workers engaged in the capital-producing industries from the other workers. The different sensitiveness of the two main branches of industry to movements of trade will become quite clear even in such a broad division of workers.

The workers in the capital-producing industries are about 40 to 50 per cent. of the total number of workers insured through their

trade unions. If the division were more accurate, they would probably prove to be about one-half of the total number of industrial workers. A more accurate study, based on a thorough knowledge of the various trade unions, of the effect of trade cycles



FIG. 13.—PERSONS INSURED BY THE INDUSTRIAL TRADE UNIONS.  
A. CAPITAL-PRODUCING INDUSTRIES. B. OTHER INDUSTRIES.  
C. ALL INDUSTRIES.

upon the number of workers would certainly prove interesting from many points of view.

On our next diagram (Fig. 13) curve *C* indicates the total number of insured persons in the industrial trade unions for every year from 1888 to 1909.<sup>1</sup> The trade booms of 1900 and 1907 can be

<sup>1</sup> For the figures, see Table VIII. in the Appendix.

clearly traced in the relevant points of the curve. The 1890 boom seems to continue into 1891, but no reaction is perceptible afterwards. But if the curve *C* is broken up into curves *A* and *B*, of which it is the sum, *A* representing the capital-producing industries and *B* the others, we find that the peaks in *C* correspond exclusively to those in *A*, while *B* shows us no points at all, and runs as smoothly on the whole, as any course of economic development can ever be supposed to do.

Thus the effects of the trade cycles, so far as they exert an influence on the number of employed workers, and so far as Germany is concerned, are scarcely noticeable in the group of "other industries," but are very pronounced in the "capital-producing industries." The descending parts of curve *A* after the trade booms clearly signify a corresponding amount of unemployment in the industries in question. In the "other industries," taken as a whole, no unemployment occurs, as the diagram shows, in consequence of the general trade fluctuations. We shall presently investigate more closely the unemployment attributable to such trade movements, but we may state here that, like the general trade cycles themselves, it must on the whole be ascribed exclusively to the production of fixed capital.

Let us examine a little more closely the development of the capital-producing industries in Germany. In the three trade booms included in our statistics, the number of workers employed increased as follows: from 1888 to 1891 by 24.49 per cent. (that is, an annual average of 8.16 per cent.), from 1894 to 1900 by 38.29 per cent. (6.38 per cent. per annum) and for 1904 to 1907 by 16.05 per cent. (5.35 per cent. per annum). For the other industries, the increases for the same periods were 12.6 per cent., 27.4 per cent., and 12.3 per cent., these being much lower in every case than in the capital-producing industries. The latter experience a period of unemployment after a trade boom, in that the number of employed workers is then smaller than the maximum number reached in the preceding trade boom. At the beginning of the revival in trade, not only are the unemployed absorbed, but new workers too are taken on in large numbers. Where do these come from? The natural

increase of population in the groups of workers in question is insufficient. In the entire German Empire the births exceeded the deaths per 1,000 inhabitants by 11.7 in 1881-90, by 13.9, in 1891-1900, and by 14.3 in 1901-10. In the twenty-one years from 1888 to 1909 the average annual increase in the population was 1.34 per cent. As the number of workers in the capital-producing industries increased yearly by 5 to 8 per cent. during the trade booms, we can see that during these periods of trade activity an influx of workers from outside must have become necessary. After the trade boom of 1891, there was a period of unemployment, which lasted over 1892 and 1893. It ceased in 1894. In 1895 the natural increase in population among the groups of workers in question was sufficient to meet the demand for labour, but from 1896 to 1900 there must have been an influx of labour from other industries. The depression at the beginning of the present century was accompanied by a spell of unemployment that continued throughout the period 1901 to 1903. But the unemployed were absorbed in 1904, and the trade revival of the three years 1905 to 1907 necessitated a considerable influx from outside to meet the demand for labour.

It follows from this that the demand for workers at the beginning of the trade boom may be met by the absorption of the unemployed of the preceding period of depression, or that, at all events, the process may be conceived arithmetically in that way, and that the real trade boom depends essentially upon an influx of additional labour from outside to cover its demand for labour.

This result, which puts the theory of the "industrial reserve army" in its proper light, is confirmed by the study of the various industries in which we can ascertain statistically the number of workers employed. The pig-iron industry, which, following upon the conclusion drawn from our investigations, may be taken as representative of the entire production of fixed capital, shows the following development since 1885 (in the average number of employed workers<sup>1</sup>:

<sup>1</sup> *Statistisches Jahrbuch für das Deutsche Reich.*

| <i>Year.</i> | <i>Employed.</i> | <i>Year.</i> | <i>Employed.</i> |
|--------------|------------------|--------------|------------------|
| 1885         | 22,768           | 1898         | 30,778           |
| 1886         | 21,470           | 1899         | 36,334           |
| 1887         | 21,432           | 1900         | 34,743           |
| 1888         | 23,046           | 1901         | 32,367           |
| 1889         | 23,985           | 1902         | 32,399           |
| 1890         | 24,846           | 1903         | 35,361           |
| 1891         | 24,773           | 1904         | 35,358           |
| 1892         | 24,325           | 1905         | 38,458           |
| 1893         | 24,201           | 1906         | 41,754           |
| 1894         | 24,110           | 1907         | 45,201           |
| 1895         | 24,059           | 1908         | 43,532           |
| 1896         | 26,562           | 1909         | 42,227           |
| 1897         | 30,459           | 1910         | 45,324           |

We see that the unemployment of 1886-7 had disappeared by 1888, and that the two years of the trade boom of 1889 and 1890 necessitated additional labour being brought in from outside. The period of 1891-5 was one of unemployment, but this was absorbed by the brisker trade of 1896. During the period 1897-9 additional labour from outside was required. The subsequent trade slump made itself felt in a spell of unemployment that lasted from 1900 to 1904. In 1905, both the unemployed and, for the most part, the natural growth in population were required; the active development of trade in 1906 and 1907 plainly called for a considerable influx of labour from outside. This additional labour flows back into the unemployed when the subsequent depression arrives.

The same is true of the iron foundry industry. The average number of employed workers (in thousands) during the present century was as follows:

| <i>Year.</i> | <i>Employed</i><br><i>(in 1000's).</i> | <i>Year.</i> | <i>Employed</i><br><i>(in 1000's).</i> |
|--------------|--|--------------|--|
| 1900         | 95.9                                   | 1905         | 109.6                                  |
| 1901         | 85.7                                   | 1906         | 117.5                                  |
| 1902         | 84.5                                   | 1907         | 119.8                                  |
| 1903         | 87.8                                   | 1908         | 113.8                                  |
| 1904         | 104.6                                  | 1909         | 112.1                                  |

We see that not only were the unemployed workers of the 1901-3 depression absorbed in 1904, but so was, without doubt, the entire natural increase in population since the trade boom, and additional

labour as well was drafted in from outside. This need of outside labour lasted during the whole of the trade revival until 1907. In the subsequent depression, a small proportion of this additional labour was again thrown out of work.

### § 65 *The Agricultural Population as a Source of Additional Labour to Industry*

As it is now settled that the periods of keen trade activity are made possible only by the influx of additional workers to the capital-producing industries, the question arises as to where this additional labour comes from, and whether these industries can rely upon such movements of labour in the future.

It is well known that, ever since the rise of modern industry, the agricultural population in the industrial countries of Europe has been in a position to supply a substantial addition of workers to other branches of industry. But the stream which brought these additions to industrial labour did not flow evenly. The capital-producing industries could not, as a rule, absorb any outside labour in times of depression, but on the other hand considerable increases of labour during trade booms were indispensable to them. Consequently, the surplus agricultural population was kept, to some extent, on the land during periods of depression – stored, so to say – until it could be absorbed by the capital-producing industries in times of trade revival. These readily available reserves of labour in agriculture constituted the real “industrial reserve army” of the capital-producing industries. It was these potential industrial workers who enabled trade booms to assume the proportions they have hitherto attained. This is not true of the “other industries,” or at least to anything like the same extent. The flow of outside labour to these industries has been much more smooth and even.

Let us now see how this process goes on in different countries.

In Germany, in the three census-years 1882, 1895, and 1907, the “industrial population” was divided into the three main occupations *A*, *B*, and *C* as follows (in thousands):

| <i>Occupation.</i>     |    |    |    | 1882.  | 1895.  | 1905.  |
|------------------------|----|----|----|--------|--------|--------|
| A. Agriculture, etc.   | .. | .. | .. | 19,225 | 18,501 | 17,681 |
| B. Industries, etc.    | .. | .. | .. | 16,058 | 20,253 | 26,387 |
| C. Trade and Transport | .. | .. | .. | 4,531  | 5,967  | 8,278  |

The agricultural population thus decreased absolutely in the periods 1882-95 and 1895-1907. The entire natural increase in population, and a not inconsiderable part of the agricultural population of 1882 in addition, definitely abandoned agriculture. By far the greater part of this surplus rural population joined classes B and C. We can obtain a rough idea of the proportions of this movement. The total population of the German Empire increased by 14.5 per cent. in the period 1882-95, and by 19.22 per cent. in the period 1895-1907. If we assume that the agricultural population increased at the same rate in the periods in question, in 1895 it should have amounted to 22,000,000, whereas the actual figure was 18,500,000, a loss of 3,500,000, or 270,000 a year. In 1907, the agricultural population, if it had increased after 1895 at the annual rate of 19.22 per cent., should have been 22,850,000; as a matter of fact, it stood at 17,680,000, so that between 1895 and 1905 it lost 4,370,000 persons, or 365,000 a year (1,000 a day). It is not necessary to point out that the sole object of these calculations is to obtain just a general idea of the extent of the migration from agriculture to those other occupations which we have under consideration.

This rural migration has not been steady, but has, for the most part, been greatest during the trade booms. For instance, none of the industrial trade unions was able to absorb any outside labour from 1892 to 1895, but from 1896 to 1900 they must certainly have attracted a million workers from outside, or about 200,000 a year, which obviously meant a greatly increased population in these industries. It is only this reservoir of potential industrial labour in agriculture during trade slumps that makes it possible to meet this extraordinary demand for labour during trade booms.

In this connection it is particularly interesting to examine which sections of the agricultural population migrate to other occupations. According to the 1895 and 1907 censuses of occupation, there were



in class *A* (agriculture, etc.) the following number of "dependants without special occupation" in the *a* and *c* classes of population, which correspond to the independent class and working-class (in thousands):

|          |    |    | 1895. |    |    | 1907. |
|----------|----|----|-------|----|----|-------|
| <i>a</i> | .. | .. | 6,550 | .. | .. | 5,144 |
| <i>c</i> | .. | .. | 3,141 | .. | .. | 2,350 |

or for every 100 self-supporting persons:

|          |    |    | 1895. |    |    | 1907. |
|----------|----|----|-------|----|----|-------|
| <i>a</i> | .. | .. | 255   | .. | .. | 205   |
| <i>c</i> | .. | .. | 56    | .. | .. | 32    |

We see that the *c* class of population had reduced the number of its "dependants without special occupation" to such an extent that any further diminution would appear to be impossible, at least for a considerable time. A population that has only 32 dependants to every 100 self-supporting persons will obviously not be able to spare as much labour in the future as it did when it had a far larger number of dependants. The *a* class of population also lost a large number of its dependants. If the class of independent farmers is to continue to increase by natural growth and have a proportionate share in the growth of the population in Germany, it does not seem possible to go much below the figure of two dependants to each self-supporting person. For the whole population of Germany the number of dependants to each 100 self-supporting persons fell from 131 in 1882 to 120 in 1895, and 100 in 1907.

In the aggregate, dependants without any special occupation in agriculture fell by about 2,200,000 from 1895 to 1907. During the same period, the class of "servants living at place of work" fell from 375,000 to 164,000, a decrease of 211,000. Thus these two classes together show a decrease of 2,411,000 persons. On the other hand, the class of persons actively employed increased by 1,590,000 between 1895 and 1907 (8,293,000 to 9,883,000). The net diminution in the total agricultural population therefore amounted to 820,000.

The process that is reflected in these figures is, clearly, a partial break-up of the agricultural family, a process that has gone farthest among agricultural labourers, but is now also in an advanced stage among the farmers themselves.

In Sweden, the changes in the agricultural population are demonstrated by the following figures<sup>1</sup>:

| <i>Year.</i> | <i>Agricultural Population<br/>(in 1,000's).</i> | <i>Per cent. of<br/>Population.</i> |
|--------------|--|-------------------------------------|
| 1870         | 3,095  | 72.1                                |
| 1880         | 3,093  | 67.7                                |
| 1890         | 2,943  | 61.5                                |
| 1900         | 2,795  | 54.4                                |
| 1910         | 2,674  | 48.4                                |

In Sweden, too, therefore, there has been a considerable relative decrease in the agricultural population since 1870. Since 1880, there has been a marked positive reduction. The phenomenon is due primarily to a decrease in the more fecund classes of the agricultural workers. In these classes, the number of married males was considerably reduced in the period 1870-1900, whilst the number of unmarried workers increased appreciably in the same period. Among the class of independent farmers, the number of whom went up considerably, the number of completely dependant members of the family, which, in the main, means children under fifteen, diminished to a marked extent, as was also the case with the agricultural population as a whole. Completely dependant persons in the total agricultural population numbered:

| <i>Year.</i> | <i>Male.</i> | <i>Female.</i> |
|--------------|--------------|----------------|
| 1870         | 549,803      | 563,357        |
| 1900         | 474,349      | 498,761        |

The relative decrease in the class of agricultural workers accustomed to rear families, and the general change in the size of agricultural families, were, in the case of Sweden, the chief causes of the diminution in the agricultural population. However, the

<sup>1</sup> *Statistisk årsbok* (Stockholm).

independent farmers and unmarried workers increased in number in the period 1870-1900.<sup>1</sup>

In the case of England, the following table shows the number of persons employed in the main branches of industry in the various census-years (in thousands)\*:

| <i>Industries.</i>                      | 1851. | 1861. | 1871. | 1881. | 1891. | 1901. |
|---|-------|-------|-------|-------|-------|-------|
| Agriculture .. ..                       | 1,905 | 1,803 | 1,424 | 1,200 | 1,100 | 988   |
| Building Trades .. ..                   | 399   | 472   | 583   | 687   | 701   | 946   |
| Mining .. ..                            | 193   | 271   | 315   | 384   | 519   | 649   |
| Cotton Industry .. ..                   | 415   | 492   | 509   | 552   | 606   | 582   |
| Woollen Industry .. ..                  | 256   | 230   | 247   | 240   | 258   | 236   |
| Silk Industry .. ..                     | 131   | 116   | 83    | 65    | 52    | 39    |
| Iron and Steel Industry                 | 95    | 130   | 191   | 201   | 202   | 216   |
| Engineering and Ship-<br>building .. .. | 81    | 124   | 173   | 217   | 292   | —     |
| Tailoring .. ..                         | 139   | 143   | 150   | 161   | 209   | 259   |
| Boots and Shoes .. ..                   | 244   | 256   | 225   | 224   | 249   | 251   |
| Printing and Book-<br>binding .. ..     | 33    | 47    | 64    | 88    | 122   | 150   |
| Furniture .. ..                         | 48    | 64    | 75    | 84    | 101   | 122   |

These figures illustrate in the clearest fashion the enormous reduction in the number of people employed in agriculture in the second half of the nineteenth century. The table also indicates which industries received the largest additions of workers from other occupations during the same period. They were the industries producing capital goods — namely, the building, iron and steel, engineering, and shipbuilding industries, as well as the printing, bookbinding, and furniture trades.

When we go more deeply into the problem of how the composition of the various groups employed in agriculture changed, we find that the number of female workers decreased far more than the number of male workers, and that the number of persons under twenty fell a little more rapidly than the total number. The number of females employed in agriculture in 1851 was 436,174, and by 1891 it had fallen to 46,001. During the same period, the

<sup>1</sup> Wohlin, *Den Jordbruksidkande Befolkningen i Sverige, 1751-1900*: "Emigration-utredningen," Bilaga IX. (Stockholm, 1909).

\* Board of Trade, *British and Foreign Trade and Industry*, Cmd. 1761, 1903, p. 362.

number of male workers fell from 1,468,513 to 1,053,371. These decreases, however, carried the disproportion between the sexes too far. By 1901 the number of females had risen to 52,459, and the number of males had fallen to 935,881.

A study of the migration of labour from agriculture up to the present time shows, therefore, that the movement cannot go on indefinitely, but in the most advanced countries must nearly have reached its limit. There are two things to be noticed. On the one hand, if agriculture is not to go backward, it can scarcely spare any more labour. On the other hand, the size of families among the agricultural population has already diminished to such an extent that the natural rate of increase of this particular class of the population can no longer be maintained at the former high level. At the present time, industry, in attracting labour from agriculture, clearly relies upon the growth of the agricultural population as it was fifteen to twenty years ago. In another fifteen or twenty years, industry will begin to feel the consequence of the present diminution in the size of agricultural families in the form of a reduced volume of additional labour coming from agriculture.

The question as to how far we should expect these results to be modified by a progressively wider distribution of land and a considerable development of smallholdings must be left open for the present. The temporary nature of the migration of labour from agriculture in the nineteenth century, which we have pointed out, is instructive enough when we consider this migration as a link in the great process of transformation which has led to our system of division of labour and modern industrialism. The very extensive emigration from Europe to countries overseas constitutes part of this development, as we all know, and this makes it difficult for us to grasp the essential features of the development. We simplify our task, and get a broad and general view by regarding the old Europe and the new countries overseas as a whole, and by asking what influence the transition to industrialism has exercised upon the agricultural population of the whole region.

We then notice that the transformation of the productive process that has taken place in our time contains two features of importance

to agriculture. In the first place a large proportion of the domestic production of the old household economy has been extinguished and transferred to the modern industrial system. The occupations that have thus been transferred are partly those which we do not now regard as in any way agricultural and partly those which are more directly connected with agriculture. To the first group belong spinning and weaving, the making of clothes and boots, and a thousand and one small domestic activities. In the second group we have butter-making, cheese-making, slaughtering, baking, and so on. In this way the old type of domestic production has been gradually reduced to agriculture alone. The latter has thus been converted into a sort of trade. In proportion as industry took over these occupations from the domestic sphere, it deprived the older family of its now superfluous labour and applied it to industrial purposes. It is clear that this development represented a change that had to be completed within a certain period of time. Our present-day agriculture is rapidly approaching the limit of its capacity to supply more labour to industry.

The second element in the transformation of the productive process is the development of the technique of agriculture. This was due partly to the improvement in agricultural methods, such as the progress of agricultural chemistry, botany and zoology, etc., and partly to the introduction of machinery. These two progressive factors gave industry something new to do, while at the same time the latter innovation served to lessen the need for labour on the land. As long as technical advances of this sort occur, we can imagine a further transfer, within certain narrow limits, of workers from agriculture to industry.

Let us continue with our inquiry. The cause of the migration from agriculture to industry has been due, for the most part, to a revolution in our entire economic organisation. This revolution has, broadly speaking, been spread over the last hundred years, and has already reached its final stage. Consequently, we must expect that in the immediate future the movement of labour from agriculture will materially diminish.

The last century was also the period which saw modern industry

begin on a large scale, the period in particular during which the capital-producing industries made extraordinarily rapid progress. This progress, as we know, was not steady and continuous; it was an advance by leaps, and was concentrated in the trade booms. It was made possible by the extraordinary additional supply of labour that could, when occasion demanded, be recruited from agriculture. If it is clear that the capacity of agriculture to meet this industrial demand for labour will be substantially curtailed at the end of the industrial revolution, we reach the important conclusion that *the trade cycles are, to a very great extent, a phenomenon of the period of transition from the old economic forms to the modern*. If outside labour can no longer be attracted, or only to a slight extent, trade booms cannot occur again with anything like their former intensity. But if the curve depicting trade cycles graphically can no longer have such peaks, it will obviously not be exposed to such violent reactions, and must progress more smoothly than has hitherto been the case.

We get an idea of the changes which take place in this sphere when we consider the actual features of trade cycles in different countries. These cyclical fluctuations are most acute in the United States, where an almost unlimited supply of labour can be drawn upon in a boom. The source of this labour in the United States is immigration. It is exceedingly instructive in this respect to study the relations between immigration and the production of fixed capital, with the latter represented by the output of pig-iron. We find that the maxima of immigration coincide with the maxima of pig-iron production, and that the minima of immigration usually take place at the close of the periods of depression. The table below brings out this fact very clearly.<sup>1</sup>

| <i>Year.</i> | <i>Immigration<br/>(in 1,000's).</i> | <i>Pig-Iron Production<br/>(in 100,000 tons).</i> |
|--------------|--------------------------------------|---|
| 1891         | 560                                  | 83  |
| 1892         | 623 max.                             | 92 max.   |
| 1893         | 503                                  | 71  |
| 1894         | 314                                  | 67 min.   |

<sup>1</sup> *Statistical Abstract of the United States*. The figures of pig-iron production refer to the calendar years, and those of immigration to the fiscal years (to June 30th of each year).

| <i>Year.</i> | <i>Immigration<br/>(in 1,000's).</i> | <i>Pig-Iron Production<br/>(in 100,000 tons).</i> |
|--------------|--------------------------------------|---|
| 1895         | 280                                  | 94  |
| 1896         | 343                                  | 86  |
| 1897         | 231                                  | 97  |
| 1898         | 229 min.                             | 118   |
| 1899         | 312                                  | 136   |
| 1900         | 499                                  | 138   |
| 1901         | 488                                  | 159   |
| 1902         | 649                                  | 178   |
| 1903         | 857 max.                             | 180 max.  |
| 1904         | 813 min.                             | 165 min.  |
| 1905         | 1,026                                | 230   |
| 1906         | 1,101                                | 253   |
| 1907         | 1,285 max.                           | 258 max.  |
| 1908         | 783                                  | 159 min.  |
| 1909         | 752 min.                             | 258   |
| 1910         | 1,042                                | 272   |

The time-lag characterising the minima of immigration is due to the fact that an addition to the labour already employed in the capital-producing industries cannot be absorbed by them until the depression is over: that is to say, until these industries have again absorbed the maximum number of workers which they employed during the last boom. It is plain that such enormous and sudden augmentations of fixed capital, like those that occur in the United States, are only possible in a country where the capital-producing industries can attract outside labour to practically any extent. In Europe, where the possibility of this happening is now very remote, we can hardly imagine such a trade boom as that which the United States experienced from 1905 to 1907. And as in Europe the movement of outside labour to the capital-producing industries is now slower than ever, we must expect a considerable contraction of the booms. This must lead to a corresponding mitigation of the slumps. While the prodigious fall in the pig-iron output in the United States in 1908 (from 25,800,000 to 15,900,000 tons) and the corresponding fall in the total production of fixed capital have no counterpart in Europe, we may look forward to a time when European slumps will be even less pronounced than they are at present.

It goes without saying that the development which we describe as probable may follow a very different path if the great capital-producing industries of the Western world in the future obtain their labour to a greater extent from among the foreign races.

### § 66 *Unemployment*

In the two preceding sections we learned something of the manner in which the flow of labour into the two main branches of industry is influenced by trade cycles. It was necessary for this purpose to use statistical data which included, at least approximately, the total number of workers in the various industries. It was only from such statistics that we were enabled to compare the number of workers employed from year to year in any particular trade.

We found that the industries producing capital goods, which in time of trade boom attract labour from other sources, dismiss some of it during periods of depression, and so cause unemployment. This does not necessarily mean, of course, that these dismissed workers will be really unemployed, for it is conceivable that to some extent they will return to agriculture, from which they had recently come, and, for the time being, again find employment there. In Sweden, as a matter of fact, this is a fairly common practice. The capital-producing industries are able to take agricultural workers or members of peasant families directly from their rural occupations. This applies, of course, particularly to the timber industry, but also, to a considerable degree, to the building industry. When these workers find no further employment in industry, they frequently return to their former occupations.

It is obvious, however, that these conditions cannot obtain in highly industrialised countries, at least not to the same extent, and in them the workers dismissed during periods of depression do, on the whole, face real unemployment. The decrease in the number of workers normally employed by their respective industries, which we have proved for Germany, should give a true general indication of the extent of unemployment caused by industrial fluctuations.



But the statistics which we have hitherto used give no idea of the temporary variations in the amount of employment. If we are to study the problem of unemployment from this point of view, to obtain a sort of barometer of the development of trade fluctuations, we must employ different methods. We must turn, in the first place, to the unemployment statistics of those trade unions which give regular returns of their unemployed members. The chief defect of these statistics is that they are usually able to include only a small part of the total number of workers.

Let us first consider the results obtained in England. The report of the *Labour Gazette* in 1893 embraced trade unions with 336,000 members, and by 1903 this number had risen to 560,000. The statistics differentiate the main groups of industries; in fact, the engineering, shipbuilding, and metal industries are specially treated. Unemployment figures are also given separately for the building trade. We are thus able to examine what proportion the unemployment registered by the trade unions in the specified industries producing capital goods bears to the corresponding unemployment in other industries.

|           | A.   | B.   | C.  | D.  | E.  |
|-----------|------|------|-----|-----|-----|
| 1872 min. | 0.9  | 1.2  | 2.4 | 1.5 | 0.0 |
| 1879 max. | 15.3 | 8.2  | 8.3 | 4.0 | 3.3 |
| 1882 min. | 2.3  | 3.5  | 2.5 | 2.4 | 0.9 |
| 1886 max. | 13.5 | 8.2  | 4.7 | 2.6 | 5.2 |
| 1890 min. | 2.2  | 2.2  | 2.5 | 2.2 | 1.6 |
| 1893 max. | 11.4 | 3.1  | 4.1 | 4.1 | 2.6 |
| 1899 min. | 2.4  | 1.2  | 2.1 | 3.9 | 1.2 |
| 1904 max. | 8.4  | 7.3  | 6.8 | 4.7 | 3.0 |
| 1906 min. | 4.1  | 6.9  | 4.8 | 4.5 | 1.9 |
| 1908 max. | 12.5 | 11.6 | 8.3 | 5.5 | 2.9 |

This table, based on Board of Trade statistics,<sup>1</sup> presents unemployment in the trade unions as a percentage of the total membership, divided into the following groups:

- A. Engineering, shipbuilding, and metal industries.
- B. Building industry.
- C. Timber and furniture industries.

<sup>1</sup> *Fourteenth Abstract of Labour Statistics of the United Kingdom, 1908-9.*

*D.* Printing and bookbinding industries.

*E.* Coal-mining, textile, clothing, paper, leather, glass, pottery, and tobacco industries.

The figures are reproduced only for those years in which the average percentage for all the trade unions was either a maximum or a minimum. We see that in the "minimum years" unemployment for all the groups is usually very small. But in the maximum years we see very clearly how depressions influence capital-producing industries (*A* and *B*) much more than they do the others. During the severe depression of 1879, for instance, when unemployment reached 15.3 per cent. in group *A* and 8.2 per cent. in the building industry, it was confined in group *E* to 3.3 per cent. Similarly in 1908, when unemployment in groups *A* and *B* was 12.5 per cent. and 11.6 per cent. respectively, while only 2.9 per cent. in group *E*. These figures are obviously a strong confirmation of the results to which our previous investigations led us, namely, that movements of trade cycles are, in essence, fluctuations in the production of fixed capital, and have only a secondary influence at the most on the other branches of production. It is in the nature of these statistics that they allow this difference in character of the two principal groups of industries to be seen only in periods of depression, for in times of booming trade real unemployment falls practically to zero in all industries, and the unemployment statistics conceal the great rise in the number of employed workers which the capital-producing industries in particular experience in times of boom.

The British Board of Trade also publishes monthly statistics of unemployment in certain trade unions which give their members unemployment relief (see table below). The real significance of these statistics is that they are a symptom of trade cycles, and represent a kind of barometer of crises. For example, when the unemployment figures in the second half of 1907 are seen to exceed the corresponding figures for the previous year, this must be taken as a sign of the turn in the trade cycle, even though this turn was not fully visible in the figures of unemployment until the beginning of 1908. On the other hand, a fall in the unemployment percentage

indicates an improvement in the trade cycle. From August, 1909, onwards there was such a fall, and, in fact, a period of improved trade did follow. Unemployment naturally varies with the time of year, the highest figures being usually reached at the end of the year. And so, as a rule, the December figures are higher than the average figures for the whole year. When there is an exception to this rule, as in 1905 and 1909, this seems a very reliable omen of an upward swing in the trade cycle.

MONTHLY RETURNS OF UNEMPLOYMENT BY THE BRITISH  
BOARD OF TRADE, 1901-11<sup>1</sup>

| Year. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Average<br>for year. |
|-------|------|------|------|------|------|-------|-------|------|-------|------|------|------|----------------------|
| 1901  | 3.5  | 3.4  | 3.1  | 3.4  | 3.0  | 3.0   | 2.9   | 3.4  | 3.2   | 3.2  | 3.3  | 4.2  | 3.3                  |
| 1902  | 4.0  | 3.9  | 3.2  | 3.4  | 3.5  | 3.7   | 3.5   | 4.0  | 4.5   | 4.5  | 4.4  | 5.0  | 4.0                  |
| 1903  | 4.9  | 4.3  | 3.9  | 3.6  | 3.5  | 3.9   | 4.4   | 5.0  | 5.2   | 5.6  | 5.5  | 6.3  | 4.7                  |
| 1904  | 6.1  | 5.6  | 5.5  | 5.8  | 5.5  | 5.6   | 5.9   | 6.3  | 6.3   | 6.3  | 6.5  | 7.1  | 6.0                  |
| 1905  | 6.3  | 5.7  | 5.2  | 5.2  | 4.7  | 4.8   | 4.7   | 4.9  | 4.8   | 4.6  | 4.3  | 4.5  | 5.0                  |
| 1906  | 4.3  | 4.1  | 3.4  | 3.2  | 3.1  | 3.2   | 3.1   | 3.3  | 3.3   | 3.9  | 4.0  | 4.4  | 3.6                  |
| 1907  | 3.9  | 3.5  | 3.2  | 2.8  | 3.0  | 3.1   | 3.2   | 3.6  | 4.1   | 4.2  | 4.5  | 5.6  | 3.6                  |
| 1908  | 5.8  | 6.0  | 6.4  | 7.1  | 7.4  | 7.9   | 7.9   | 8.5  | 9.3   | 9.5  | 8.7  | 9.1  | 7.8                  |
| 1909  | 8.7  | 8.4  | 8.2  | 8.2  | 7.9  | 7.9   | 7.9   | 7.7  | 7.4   | 7.1  | 6.5  | 6.6  | 7.7                  |
| 1910  | 6.8  | 5.7  | 5.2  | 4.4  | 4.2  | 3.7   | 3.8   | 4.0  | 4.3   | 4.4  | 4.6  | 5.0  | 4.7                  |
| 1911  | 3.9  | 3.3  | 3.0  | 2.8  | 2.5  | 3.0   | 2.9   | 3.3  | 2.9   | 2.8  | 2.6  | 3.1  | 3.0                  |

For Germany, the *Reichs-Arbeitsblatt* has published since 1903 continuous statistics of unemployment in the German trade unions. The number of unemployed (at home or travelling) in proportion to the number of members of the unions which send their reports is given for the end of the last week in every month. The figures for March, June, September, and December since the beginning of the statistics are reproduced here:

| Year. | March. | June. | September. | December.        |
|-------|--------|-------|------------|------------------|
| 1903  | —      | 3.2   | 2.3        | 2.6              |
| 1904  | 2.0    | 2.1   | 1.8        | 2.4              |
| 1905  | 1.6    | 1.5   | 1.4        | 1.8              |
| 1906  | 1.1    | 1.2   | 1.0        | 1.6              |
| 1907  | 1.3    | 1.4   | 1.4        | 2.7              |
| 1908  | 2.5    | 2.9   | 2.7        | 4.4              |
| 1909  | 3.5    | 2.8   | 2.1        | 2.6              |
| 1910  | 1.8    | 2.0   | 1.8        | 2.1              |
| 1911  | 1.9    | 1.6   | 1.7        | 2.4              |
| 1912  | 1.6    | 1.7   | 1.5        | 2.8 <sup>a</sup> |

<sup>1</sup> *Fourteenth Abstract of Labour Statistics*, p. 7, *Labour Gazette*, 1911-12.

<sup>a</sup> *Reichs-Arbeitsblatt*, X. Jahrgang, Nr. 4, p. 264.

The low figures for 1905, 1906, and 1907, clearly reflect a trade boom, and the subsequent depression is just as clearly seen in the high figures for 1908 and 1909. The significance of these statistics, however, lies only in their use as general symptoms. Comparison between the different years, and especially between the various trades, becomes, owing to the nature of the material, much more difficult. The number of workers considered has increased four-fold since 1904, having risen from about half a million to about two millions. The various trades are very unequally represented, and the data for several important industries, such as mining and building, happen to be very defective.

In order to obtain an idea of the duration of unemployment, the *Reichs-Arbeitsblatt* calculates for every quarter the proportion of the total number of unemployed days to the total number of "member-days" – that is, the number of members multiplied by the number of working days in the quarter (possible working days). Out of every hundred possible working days the following were "unemployed days"<sup>1</sup>:

|      | 1st Quarter. | 2nd Quarter. | 3rd Quarter. | 4th Quarter. |
|------|--------------|--------------|--------------|--------------|
| 1909 | 3.2          | 1.9          | 1.6          | 1.4          |
| 1910 | 1.7          | 1.4          | 1.2          | 1.2          |
| 1911 | 1.8          | 1.0          | 1.1          | 1.1          |
| 1912 | 1.8          | 1.1          | 1.1          | 1.4          |
| 1913 | 2.1          | 1.8          | 2.1          | 2.5          |

The figures show that the period of depression was definitely over by 1910, and that the end of the subsequent period of favourable trade is clearly indicated by the growing unemployment in the fourth quarter of 1912.

To illustrate the extent of employment among German workers, the *Reichs-Arbeitsblatt* also publishes statistics of the changes in the number of employed members under the sick-insurance scheme, subtracting the increase in this number which is due to the growth of population. These statistics can, naturally, be used only as a barometer for the labour market, but as such they can claim a certain value, as the returns include about 5,700,000 members (March, 1912).

<sup>1</sup> *Reichs-Arbeitsblatt*.

The work of the labour exchange, as an intermediary, is also given to illustrate the state of the labour market. But the number of those seeking work as compared with the number of vacant situations is far too complicated a problem to afford any help to the theoretical explanation of the changes in the labour market.

### § 67 *Changes in Working-time*

So far, we have examined those changes in the number of employed workers which correspond to the fluctuations in production brought about by trade cycles. We found that, during a trade boom, the industries producing capital goods partly re-absorb those workers who had been thrown out of work in the depression and partly attract outside labour, only to dismiss some of it again in the next depression. But there is another method of adjusting labour to the requirements of varying productive activity, and that is to increase or curtail the daily working-time or the number of working days in the week.

This latter method is employed in the English coal-mines, where its operation can be followed statistically. The annual average of the number of working days in the week is given in the following table<sup>1</sup>:

|      |    |    |    |      |      |    |    |    |      |
|------|----|----|----|------|------|----|----|----|------|
| 1895 | .. | .. | .. | 4.74 | 1903 | .. | .. | .. | 5.09 |
| 1896 | .. | .. | .. | 4.92 | 1904 | .. | .. | .. | 5.07 |
| 1897 | .. | .. | .. | 5.13 | 1905 | .. | .. | .. | 5.03 |
| 1898 | .. | .. | .. | 5.25 | 1906 | .. | .. | .. | 5.26 |
| 1899 | .. | .. | .. | 5.46 | 1907 | .. | .. | .. | 5.51 |
| 1900 | .. | .. | .. | 5.47 | 1908 | .. | .. | .. | 5.22 |
| 1901 | .. | .. | .. | 5.12 | 1909 | .. | .. | .. | 5.14 |
| 1902 | .. | .. | .. | 5.22 | 1910 | .. | .. | .. | 5.19 |

We see that the working-time per week rises from a minimum in 1895 to a maximum in 1900, falling again to a minimum in 1905, and rising once more to a maximum in 1907. The differences between the maxima and the minima are, as can be seen, fairly significant.

<sup>1</sup> Board of Trade, Memoranda, etc., Cmd. 2337, 1904, pp. 80 and 94, *Fourteenth Abstract of Labour Statistics*.

The working-time in 1907 was greater for every month than in the corresponding month of the previous year. It is not until the beginning of 1908 that a decrease takes place, and not until the last quarter of 1908 that the working-time falls below the 1906 level.

In iron-mining, too, this method of adjusting requirements to the amount of labour is employed. The average number of working days in the week in iron-mining, from 1896 to 1910, was as follows:

|      |    |    |      |      |      |    |    |    |      |
|------|----|----|------|------|------|----|----|----|------|
| 1896 | .. | .. | ..   | 5.72 | 1903 | .. | .. | .. | 5.72 |
| 1897 | .. | .. | ..   | 5.76 | 1904 | .. | .. | .. | 5.79 |
| 1898 | .. | .. | ..   | 5.75 | 1905 | .. | .. | .. | 5.77 |
| 1899 | .. | .. | ..   | 4.76 | 1906 | .. | .. | .. | 5.78 |
| 1900 | .. | .. | ..   | 5.65 | 1907 | .. | .. | .. | 5.81 |
| 1901 | .. | .. | ..   | 5.58 | 1908 | .. | .. | .. | 5.69 |
| 1902 | .. | .. | ..   | 5.74 | 1909 | .. | .. | .. | 5.76 |
|      |    |    | 1910 | ..   | ..   | .. | .. | .. | 5.77 |

Here, the fluctuations are, as we should expect, smaller, but they bring out clearly the upward movement from 1901 to 1907, and the subsequent decline in 1908.

In iron and steel works the number of working shifts is adapted to varying requirements. The average number of shifts worked by one man in a week was, in the following years<sup>1</sup>:

|      |    |    |    |      |      |    |    |    |      |
|------|----|----|----|------|------|----|----|----|------|
| 1901 | .. | .. | .. | 5.32 | 1906 | .. | .. | .. | 5.57 |
| 1902 | .. | .. | .. | 5.36 | 1907 | .. | .. | .. | 5.58 |
| 1903 | .. | .. | .. | 5.39 | 1908 | .. | .. | .. | 5.36 |
| 1904 | .. | .. | .. | 5.40 | 1909 | .. | .. | .. | 5.38 |
| 1905 | .. | .. | .. | 5.51 | 1910 | .. | .. | .. | 5.50 |

Here again the trade boom of 1907 is conspicuous.

When we multiply the average shifts worked by the number of men employed, we obtain a correct measure of the extent of employment in the iron and steel works. The percentage increase or decrease for every month in comparison with the corresponding month in the previous year is regularly published by the *Labour*

<sup>1</sup> *Fourteenth Abstract of Labour Statistics.*

*Gazette.* The percentages for the years 1906 to 1909 are as follows<sup>1</sup>:

|           |    |    | 1906. | 1907. | 1908. | 1909. |
|-----------|----|----|-------|-------|-------|-------|
| January   | .. | .. | +13.3 | +2.9  | - 6.6 | - 5.8 |
| February  | .. | .. | +10.1 | +3.4  | - 8.3 | - 7.8 |
| March     | .. | .. | +10.7 | +3.1  | -10.0 | - 4.1 |
| April     | .. | .. | + 8.4 | +5.5  | -12.8 | - 4.1 |
| May       | .. | .. | + 7.0 | +5.4  | -13.9 | - 0.4 |
| June      | .. | .. | + 8.5 | +5.2  | -14.7 | +1.4  |
| July      | .. | .. | + 5.6 | +4.1  | -14.0 | +0.9  |
| August    | .. | .. | + 5.4 | +4.4  | -13.3 | +3.2  |
| September | .. | .. | + 4.2 | +2.5  | -12.3 | +3.7  |
| October   | .. | .. | + 4.6 | -1.9  | -11.2 | +6.3  |
| November  | .. | .. | + 3.1 | -4.9  | - 9.0 | +6.5  |
| December  | .. | .. | + 3.1 | -4.0  | -11.4 | +9.6  |

These figures are sufficiently suitable to inform us accurately of the time of the beginning and end of the depression. We find that it is not until October, 1907, that a decrease takes place in the employment induced by the trade boom as compared with the corresponding month in the previous year. It is not until November that the decline exceeds the increase of the previous year, and not until May, 1908, that the whole increase of the two years of boom is balanced. Thus the iron and steel industries were very busily employed up to the last moment of the trade boom; and this is in accordance with the results we reached above (§ 63, at the end) in our inquiry as to the time of the commencement of the decrease in the production of materials of fixed capital.

<sup>1</sup>From Pohle, *Monatliche Übersichten*.

## CHAPTER XVI

### INFLUENCE OF TRADE CYCLES ON THE DURABLE MATERIAL MEANS OF PRODUCTION

#### § 68 *Changes in the Quantity and Efficiency of the Factors of Production*

THE changes in production which appear in the various stages of the trade cycle point to changes in the employment not only of labour, but also of the material means of production. Increased output during a trade boom is inconceivable without an increased use of these. The greater demand for them during a trade boom can be met in two ways:

1. By the manufacture of new means of production, thus increasing the total supply, or, at least, raising its efficiency.
2. By the better use of the existing means of production.

Let us consider the former alternative first. In the first place, we can leave out of consideration those material means of production which we have lumped together under the name of "circulating capital." For an increase in the production of circulating capital is to be regarded, as we know, as an accompaniment of every extension of the economic processes of production. We may therefore limit our investigations to the increase in the durable material means of production, or of fixed capital, involved by the increased production during a trade boom.

Where does this increase in the durable means of production, which the trade boom necessitates, originate? The production of fixed capital is, as we have seen, continuous, and, although it proceeds at a slower rate during periods of depression than in times of brisk trade, yet even then it goes on to a considerable extent. The fall in pig-iron production during periods of depression may amount to several per cent.; in exceptional cases it may be much greater (in



the United States in 1908 it was 38 per cent.), but the production nevertheless, even in severe depressions, is substantially maintained. We have reason to suppose that what applies here to pig-iron production applies equally to the entire production of fixed capital. The construction of new railways goes on, as the statistics show, at all times, even though it varies in extent. The re-equipping of the railways in order to increase their efficiency is also continued during periods of depression, as we may best observe in the United States, with its system of private railways, and its severe trade cycles.<sup>1</sup> The annual increase in the length of railway track, which had amounted to 2,644 miles in 1892-3, fell to 1,240 miles in the depression of 1894-5. This is undoubtedly a significant decrease, but it demonstrates nevertheless that the construction of railway stations continued on a considerable scale during the whole period of depression. During 1903-4, a year of trade prosperity, the construction of new railway track reached the total of 4,932 miles. This figure was reduced in the following year of depression merely to 3,450 miles. The construction of second, third, and fourth railway tracks was also continued during the periods of depressions, and reached a minimum of 880 miles in 1905-6, for instance, and 1,485 miles in the following year. We thus find constant work being done, continuing right through the slumps, to improve the traffic capacity of the railway system. The same may be said of rolling stock. The number of trucks in 1903-4, roughly 1,654,000, was increased by 38,000, and in 1904-5 by a further 39,000. At the same time, the average carrying capacity rose from 29 to 30 and 31 tons. This shows that a considerable scrapping of old trucks took place, and that the number of new trucks must have been much greater than the number quoted. The increase in the number of coaches during the depression is very small in proportion to the enormous increase in the subsequent trade boom, when it amounted to 107,000 in 1905-6, and 153,000 in 1906-7; yet it shows that in this respect, too, the depression period added a contribution, by no means insignificant, to the improvement of the traffic capacity of the railways.

<sup>1</sup> *Statistical Abstract of the United States.*

What we have established in figures as regards the railways holds good for the entire sphere of economic production. At the end of a depression the economic system of the country is essentially better equipped with durable material means of production than at the beginning, and is thus well prepared for the approaching upward trend of the trade cycle. This equipment facilitates the increased production during the period of expanding trade, but it is not nearly sufficient to meet the extraordinary demand created by the expansion. By far the greatest part of the new means of production which are required during the trade boom must be produced within its duration; and this is the reason why the production of fixed capital, too, as we have seen, increases during a boom. It is just this significant increase in the production of material means of production above the normal rate which, in particular, creates the trade boom.

We have already seen, in one example, that during a depression the antiquated equipment of production is discarded and replaced by a new and better one, so that average productivity is improved. It is very interesting to observe these changes in the case of pig-iron production, which is indeed the most important basis of the production of fixed capital.

It is a well-known fact that blast furnaces have been considerably enlarged during the last generation. This change was effected by the constant construction of new blast furnaces and scrapping of old ones. This, however, was not a uniform development. The demolition of the old furnaces evidently took place to a larger extent in times of depression. During trade booms it was more often necessary to re-employ furnaces which had been abandoned during the depression, even if they were perhaps considered out-of-date.

The German statistics of the industry give, in addition to the total production of pig-iron, the time (that is, the number of weeks) during which the blast furnaces were in operation. We can thus calculate the average pig-iron output per working week. If we multiply this figure by fifty-two, we obtain figures which may serve as a measurement of the average annual productive capacity

of the active blast furnaces, assuming that they are in constant operation (see Table IX.). The productivity of German blast furnaces, thus reckoned, rose in the period 1872-1909 from 7,560 tons to 51,320 tons. The increase, however, slackens considerably during periods of depression. For the whole time, we can count some nineteen bad and eighteen good years. In the bad years, the increased productivity averages 1,555 tons, and in the good years it is, on the contrary, only 789 tons. This is due to the fact that the old blast furnaces were overwhelmingly thrown out of use or definitely abandoned in the periods of depression. The building of new furnaces seems to have been carried on more uniformly. The fact that more or less antiquated furnaces are again brought into use during expanding trade counteracts the increase in productivity which is bound up with new construction. In 1880, with the trade cycle moving upwards, and when pig-iron production rose from 2,227,000 tons to 2,729,000 tons, the number of working blast furnaces increased from 210 to 226, and as a result the average productivity even suffered slightly, falling from 12,934 to 12,930 tons. Apart from this instance, the tendency towards increasing productivity prevails, although, as stated, the increase is always much slower during a boom than during a depression. In the severe depression after 1900, when the output of pig-iron declined from 8,520,000 tons to 7,889,000 tons in 1901, and reached only 8,530,000 tons even in 1902, the average productivity of the blast furnaces rose from 33,430 tons to 35,580 tons and 40,520 tons; this particular change is clearly connected with the fact that the number of existing furnaces fell from a maximum of 309 in 1901 to 289 in 1902, and the number of furnaces in operation fell from a maximum of 274 in 1900 to 241 in 1902. In 1908 there were seven more blast furnaces in existence than in the previous year, but the number in operation had decreased by twenty-three, both of these changes together causing an increase in the average productivity from 45,298 to 48,733 tons.

We may accept it as a rule that the discarding of antiquated means of production generally takes place during periods of depression, while, on the other hand, the production of new means of

production is carried on more vigorously during expansion of trade. An increased productive capacity is always a result of the development during periods of depression, on which the coming trade boom can rely. It is also very probable that during depressions old methods of production are abandoned. In part this is directly connected with the creation of new means of production, but to some extent this improvement in methods has its foundation in the sphere of organisation. The periods of slackened activity allow the business men time to effect a comprehensive reorganisation of their concerns. In this way, too, in all probability, a very general increased productive capacity is obtained.

The multiplication of durable material means of production, which we can prove takes place during a depression period, represents naturally an accumulation of capital during the period. But it is not the accumulation of capital in "money form," or of "free capital" waiting for investment, assumed by certain theorists and financial journals. The formation of capital is, during the depression as at all other times, a real increase in invested capital, and in particular of fixed capital. This accumulation of capital is scarcely to be considered as a condition of a trade boom, and is, in any case, far from being a sufficient basis for the increased production. To a considerable extent, this expansion of production must always depend, as we have seen, on means of production which the trade boom itself creates.

The expansion of capital in a depression is also in part an accumulation of circulating real capital – that is, of stocks of commodities which do not find purchasers in the depression. These commodities may be materials for fixed capital or for products which pass into consumption, or consumption goods properly so called. Apparently, it is sometimes imagined that the boom is made possible only through such an accumulation of stocks. This view has at least the advantage of assuming a concrete basis for the capital accumulation, which is definitely to be considered as a preliminary condition of the trade boom; and, according to it, the exceptional increase in the production of fixed capital, which distinguishes the trade boom, is facilitated, partly directly by the stocks of materials for such

real capital, and partly by the fact that productive forces could, thanks to stocks of consumers' goods or materials from which these can be produced, be diverted from the immediate supply of goods to the consumers to the production of fixed capital. In this conception there lurks a trace of the old theory of Adam Smith, according to which "a stock of goods must be stored up somewhere" before any production of capital can begin (cf. p. 38). We may now stress the point that the existence of stores of this description can have no material significance for the trade boom, since, as we know, the production of materials and consumption goods during the boom is extended beyond the normal in every sphere, and thus the boom itself covers in the main its demand for these articles. Whether the preceding depression has left stores of, say, pig-iron, is really a matter of indifference to the development of the boom, since the extra supply that will be taken from such stocks to meet requirements is, in any case, of little consequence in comparison with the enormous production in the boom itself.

Although it is difficult to compile really adequate statistics of the accumulated stores during periods of depression, yet we may venture to assert that the depression is characterised, above all, not by "overproduction" (that is, a production of goods which cannot be sold for the present), but rather by an incomplete utilisation of the existing factors of production. The stocks which are accidentally left over here and there by the depression form no general or necessary condition of the origin of the trade boom, nor any essential element in explaining the possibility of its occurrence.

### § 69 *Variations in the Use of Factors of Production*

The other chief method of facilitating an increased production during a boom is the better utilisation of the existing factors of production.

This better utilisation may, so far as the circulating capital is concerned, be attained by accelerating the whole process of production and thus increasing the "velocity of circulation" of circulating

capital. This is clearly equivalent to reducing the stores of circulating capital relatively to the extent of production. During a boom, when production is pushed forward with the greatest possible intensity, every intermediate product is, as a rule, passed on with all haste to the next stage of production, and does not remain long in store. It may be generally assumed that, in this sense, a better use of circulating capital is a feature of the boom. But it would certainly be an error to see in this an essential element in the explanation of the increased production of the boom.

There is no doubt that better use is made of the durable material means of production during a boom, and that this conduces, to a certain extent, to increased production. In periods of depression, the durable means of production are either badly used or not used at all. The changes in their use are partly connected with the fluctuating employment of labour. When a factory works overtime or employs extra shifts, there is obviously a better use made not only of the machines, but also of the whole plant. If new workers are taken on, new machines will to some extent become necessary, but the existing machines are often sufficient for the larger number of workers. In such cases, the increased production is partly made possible by the more intensive use of the machinery. This is likewise true of the factory buildings and the rest of the plant.

But, quite apart from the changes in the number of workers or working hours, there are considerable fluctuations in the employment of the durable means of production; as, for instance, when a ship makes a voyage on one occasion with a full cargo and on another with only half a cargo.

In certain cases we are in a position to illustrate statistically these variations in the use of the durable means of production and so to get an approximate idea of the extent of the fluctuations, and a more accurate conception of the time when they occur. Railway statistics are particularly suitable for this purpose. Below are submitted several tables showing the use of the existing railway stock on the German railways. Taking 1,000 "kilometres of use" to one locomotive, the average is<sup>1</sup>:

<sup>1</sup> *Statistisches Jahrbuch für das Deutsche Reich.*

| <i>Year.</i> | <i>Kilometres of Use<br/>(in 1,000's).</i> | <i>Year.</i> | <i>Kilometres of Use<br/>(in 1,000's).</i> |
|--------------|--|--------------|--|
| 1888         | 22.4                                       | 1900         | 27.4                                       |
| 1889         | 23.4                                       | 1901         | 26.8                                       |
| 1890         | 24.4                                       | 1902         | 26.5                                       |
| 1891         | 24.6                                       | 1903         | 27.4                                       |
| 1892         | 23.4                                       | 1904         | 28.1                                       |
| 1893         | 23.3                                       | 1905         | 28.9                                       |
| 1894         | 23.4                                       | 1906         | 29.8                                       |
| 1895         | 23.9                                       | 1907         | 30.1                                       |
| 1896         | 24.9                                       | 1908         | 28.1                                       |
| 1897         | 25.6                                       | 1909         | 26.5                                       |
| 1898         | 26.7                                       | 1910         | 26.5                                       |
| 1899         | 27.0                                       | 1911         | 27.4                                       |

It is seen that there is, in general, an improvement in the use of the locomotives, but this takes place only during periods of boom, and must give way to a certain retrogression during depressions. Thus the rate of use reached in 1891 was not maintained in the subsequent depression, and was not exceeded until 1896. Then there was a sharp rise until 1900, which, however, was interrupted by the depression that followed, and was only resumed in the later 1907 trade boom. The subsequent depression again caused a considerable decline in the rate of use.

Similarly with the use of railway coaches. The following figures represent (in 1,000's) the number of "wagon-axle kilometres" to one wagon-axle<sup>1</sup>:

|      |    |    |    |      |      |    |    |    |      |
|------|----|----|----|------|------|----|----|----|------|
| 1895 | .. | .. | .. | 19.1 | 1903 | .. | .. | .. | 20.1 |
| 1896 | .. | .. | .. | 19.3 | 1904 | .. | .. | .. | 20.6 |
| 1897 | .. | .. | .. | 19.5 | 1905 | .. | .. | .. | 21.4 |
| 1898 | .. | .. | .. | 19.7 | 1906 | .. | .. | .. | 22.0 |
| 1899 | .. | .. | .. | 19.9 | 1907 | .. | .. | .. | 22.2 |
| 1900 | .. | .. | .. | 19.6 | 1908 | .. | .. | .. | 20.7 |
| 1901 | .. | .. | .. | 18.9 | 1909 | .. | .. | .. | 20.5 |
| 1902 | .. | .. | .. | 19.2 | 1910 | .. | .. | .. | 21.1 |
|      |    |    |    | 1911 | ..   | .. | .. | .. | 21.7 |

The changes in the conditions of trade can easily be traced in these figures.

The whole railway system is of course much better utilised during

<sup>1</sup> *Statistisches Jahrbuch für das Deutsche Reich.*

a trade boom than at other times. This is clearly seen in the statistics showing "ton miles" per mile of track which are published in the United States. The goods traffic on the Swedish State Railways in tons per day and kilometres of line shows the following development in the period 1870-1910, taking only the maxima and minima<sup>1</sup>:

|      |    |    |    |      |      |    |    |    |      |
|------|----|----|----|------|------|----|----|----|------|
| 1870 | .. | .. | .. | 1.56 | 1894 | .. | .. | .. | 2.98 |
| 1876 | .. | .. | .. | 2.85 | 1900 | .. | .. | .. | 4.99 |
| 1879 | .. | .. | .. | 2.22 | 1901 | .. | .. | .. | 4.85 |
| 1883 | .. | .. | .. | 2.77 | 1907 | .. | .. | .. | 6.68 |
| 1887 | .. | .. | .. | 2.49 | 1909 | .. | .. | .. | 6.13 |
| 1889 | .. | .. | .. | 3.26 | 1910 | .. | .. | .. | 7.28 |

In order to determine the point of time at which a change in the use of fixed capital takes place, we may consider the monthly revenues of the railway systems of the great industrial countries. In Germany, the income in marks from goods traffic per kilometre of working line was, in the following months<sup>2</sup>:

| 1907.        |    |    |       | 1908.       |    |       |  |
|--------------|----|----|-------|-------------|----|-------|--|
| July ..      | .. | .. | 2,696 | January ..  | .. | 2,493 |  |
| August ..    | .. | .. | 2,819 | February .. | .. | 2,526 |  |
| September .. | .. | .. | 2,745 |             |    |       |  |
| October ..   | .. | .. | 3,085 |             |    |       |  |
| November ..  | .. | .. | 2,903 |             |    |       |  |
| December ..  | .. | .. | 2,525 |             |    |       |  |

In each of these months, the income was greater than that of the corresponding month of the preceding year. There is no reaction in this respect until March, 1908, and it is only in the fourth quarter of that year that the revenue falls below the figure for 1906.

For twenty of the leading British railways, the return from goods traffic shows an advance for each month of 1906 and 1907 upon the corresponding month of the previous year, an advance which even in December, 1907, is more than £120,000. There is no decrease until January, 1908, and it is not considerable enough until February to counteract the whole increase of the preceding year.

<sup>1</sup> *Statens Järnvägstrafik*, 1910, pp. 187-8.

<sup>2</sup> These and the subsequent monthly figures are taken from Pohle, *Monatliche Übersichten*.



For the United States, figures are published showing the percentage increase or decrease in the net working revenue in comparison with the corresponding month of the previous year. These statistics show a continual rise until December, 1907, when the first set-back takes place, which, however, does not overbalance altogether the increase of the corresponding month of the previous year. From the beginning of 1908 onwards, however, the decrease is very marked.

Thus, in all these cases, the fall in revenue did not occur until after the commencement of the crisis. Throughout the boom period, until the crisis, the railways were very busy. In many cases, their capacity for transport could not satisfy the demand, as we may infer from the reports of the prevailing scarcity of trucks.

The varying utilisation of the durable means of production may sometimes also be statistically confirmed by the production of consumption goods, as, for instance, when we compare, in the English cotton industry, the consumption of raw cotton with the number of spindles at work during the year. The consumption of raw cotton shows the following fluctuations since 1880, giving only the pronounced maxima and minima<sup>1</sup>:

| <i>Year.</i> | <i>Absolute Consumption<br/>(in 1,000 cwts.).</i> | <i>To One Spindle<br/>(in 1,000 cwts.).</i> |
|--------------|---|---|
| 1880         | 12,300  | 310   |
| 1883         | 13,400  | 319   |
| 1885         | 11,900  | 277   |
| 1891         | 14,900  | 332   |
| 1893         | 13,200  | 292   |
| 1899         | 15,700  | 347   |
| 1903         | 13,900  | 295   |
| 1907         | 17,600  | 338   |

It can be seen that the maximum consumption of raw cotton coincides approximately with the turning years of the trade cycle, and that highest and lowest rates of this consumption correspond respectively with the highest and lowest rates of utilisation of the spindles. The rise in the rate of utilisation during the trade boom is

<sup>1</sup> Board of Trade, *British and Foreign Trade and Industry*, 1909, Cmd. 4954, pp. 153 and 157. The proportions have been calculated.

certainly considerable, but is by no means sufficient to meet the demand, and must be supplemented by simultaneous additions to the number of spindles. For example, the number grew from 47 million spindles in 1903 to 52 millions in 1907.

That considerable fluctuations occur in the use of the durable means of production in the case of the pig-iron industry, we have already seen in dealing with the German blast furnaces. Many blast furnaces which are not employed during a depression were again brought into use during every boom. This is particularly clear in the United States. On December 31st, 1902, 307 furnaces were active, and on the same day in 1903, after the arrival of the crisis, there were only 182 in use. The number in use at the end of 1906 was 340, and at the end of 1907, only 167.

The partial utilisation of the durable material means of production, which we have shown to take place during periods of depression, is really the most characteristic feature of a trade slump. The definition of a depression is, in general, a period of relative unemployment of the durable means of production. But, as we have found, the general broad movements of the trade cycle consist essentially of a variation in the production of fixed capital. Hence depressions must make themselves chiefly felt in a relative unemployment of those durable means of production which serve for the production of fixed capital. The quantity of such means of production is determined by the highest demand during a trade boom. As the production of fixed capital falls off after a crisis, these means of production must be only partly employed, precisely because they are durable and fixed. It is just this feature which most surely characterises the depression.

We can follow this phenomenon in the case of the production of pig-iron, which may, as a matter of fact, be considered as representative of the whole production of fixed capital. In the diagram (Fig. 14) the pig-iron output of the world is presented. At the time when the output is at its maximum there must clearly be such a quantity of durable means of production used in the pig-iron production as will suffice for the maximum production. All these durable means – blast furnaces, iron-mines, equipment, etc. –

which are necessary in the trade boom are still in existence during the depression, and represent the productive capacity of the community in this field.

This productive capacity is shown on the diagram by a horizontal

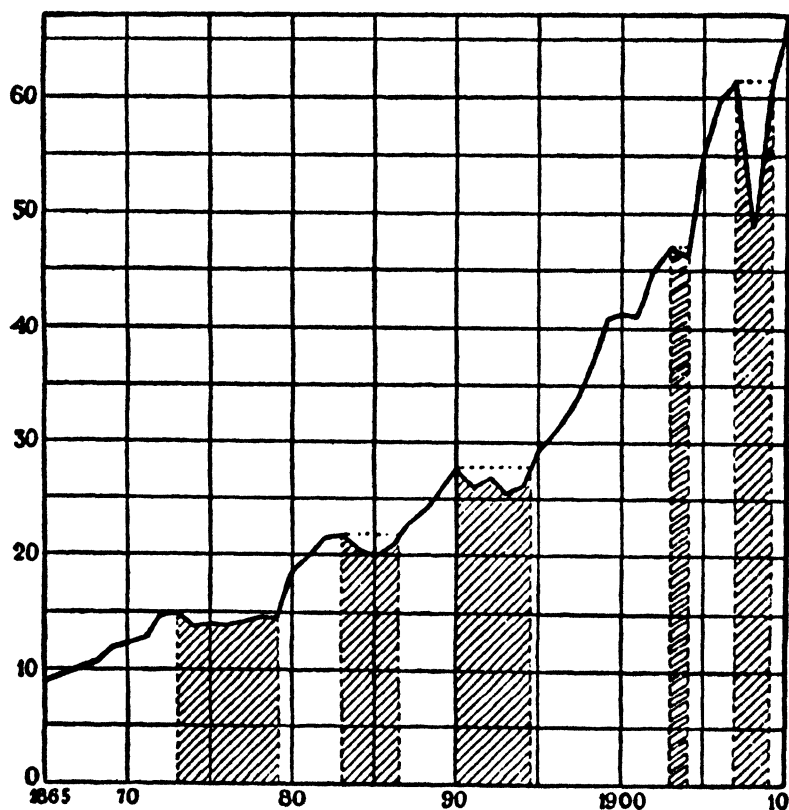


FIG. 14.—GRAPHIC REPRESENTATION OF THE PERIODS OF DEPRESSION. THE WORLD PIG-IRON OUTPUT IN MILLIONS OF TONS.

dotted line which starts from the peak of a trade boom. So long as the output of pig-iron remains below this productive capacity, a certain amount of unemployment of the means of production prevails. This output exceeds the previous productive capacity, that is, until the curve cuts across the dotted line. In this way, we can indicate graphically the periods of depression. They are shown, on our diagram, by shaded areas.

This diagram gives a correct and concrete conception of the nature of depressions. *A depression is a period in which the demand for durable material means of production is smaller than in the boom which precedes it.* "Overproduction" is not necessarily a condition of the depression. It is enough that the actual production is less than is possible with the existing means of production. The part of the productive capacity which stands idle usually amounts, as we can see in the diagram, to only a small percentage. But, for all that, it means a considerable loss to the owners, a loss which is aggravated by the fact that competition keeps down the prices of such work as is still available. Moreover, the workers are bound up, to a certain extent, with production, and for them, too, the depression means comparative loss of work, or unemployment and pressure on wages. Thus the slight dip in the curve of pig-iron output, since this output represents the total production of fixed capital, is sufficient to cause severe disturbances in the whole economic system.

A glance at the diagram shows us that the periods of depression have a tendency to become shorter. This tendency must obviously continue so long as the pig-iron output curve follows the same upward movement as it has, in the main, done since 1870. We cannot, of course, predict the future trend of this curve.

Since the production of fixed capital continues steadily, the community is better provided with durable means of production at the end of the depression than at the beginning. The relative idleness of the factors of production is, therefore, greater than it would appear from the diagram. But as soon as production again reaches the level of the previous boom, the depression, as experience shows, is over, and an upward trend in the trade cycle is started. Thus our method of constructing the periods of depression is satisfactory.

The results which we have reached in this section bring out clearly the significance, in the fluctuations of the trade cycle, of the durability of the means of production. It is often asked, Why cannot productive forces be perfectly adjusted to demand? This question is sometimes made the starting point of an adverse criticism of the whole modern economic system. But it overlooks the fact

that the durable means of production must be adapted to the highest point in the demand, and thus, precisely because they are durable, they must be in excess at every decrease in demand. They could be permanently and fully employed only if the demand for their employment never fell off.

In regard to the effects of the fluctuations in demand, we must distinguish between those durable means of production which work directly for the consumer and those that are employed in producing further instruments of production. A fall in the demand of consumers means a corresponding idleness for the first group of means of production, but possibly complete idleness for the second group, since there are more than enough means of production available for the first group.

In order to bring about a certain amount of unemployment of the means of production of the second group, it is not even necessary that there should be a fall in demand for consumption goods on the part of consumers. If it is thought that demand will remain constant for a time, the creation of more means of production of the first group ceases, and those of the second group have nothing to do, unless they are employed in repairing or replacing the worn-out equipment of the first group. Even if the consumers' demand is not constant, but increases only a little more slowly than the normal, it will not be necessary to make more than a slight additional quantity of the means of production of the first group, and those of the second group will be only partially employed.

It follows from this that the production of durable means of production must be, on the whole, much more sensitive to the fluctuations of the demands of consumers than the production which works directly for the needs of consumers. In such circumstances, it is only natural that the production of fixed capital should show more pronounced fluctuations than the rest of production, a fact which we have already ascertained in various ways.

How far the employment of the means of production of the higher order can be influenced by the fluctuations in the demand of the final consumer is seen, particularly when one considers those means of production that serve only a very special purpose.

Consider, for example, English shipyards. The vessels which they produce are durable means of production, and the demand for them may be represented by the extent of the freightage. The fluctuations in this demand need not be great in order to cause violent

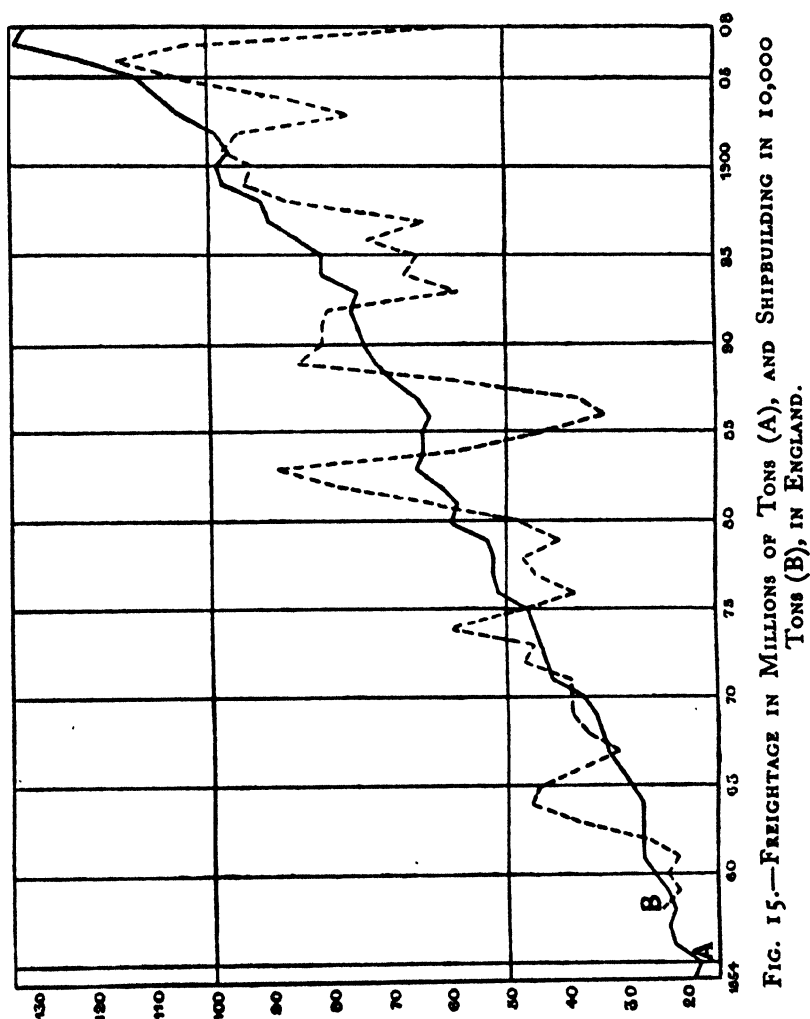


FIG. 15.—FREIGHTAGE IN MILLIONS OF TONS (A), AND SHIPBUILDING IN 10,000 TONS (B), IN ENGLAND.

fluctuations in the extent of employment of the yards. In the preceding diagram (Fig. 15), curve *A* indicates the total tonnage of ships entering English ports annually, and thus gives us an idea of the development of freightage. Curve *B*, on the other hand, shows, in

tens of thousands of tons, the total tonnage of new ships built annually in English yards.<sup>1</sup> As we can see, curve *A* needs to dip very slightly, or even remain horizontal for a time, to provoke a startling reduction in the employment of the shipbuilding yards.

The freightage curve must be regarded, on the whole, as being very uniform. It will be difficult to attain greater uniformity in this and in similar lines of development in the near future. Yet the slight deviations from the steady proportional rise are enough to cause grave disturbances in the shipbuilding industry. According to this, therefore, the prospect of ever attaining completely uniform activity, not exposed to the fluctuations of the trade cycle, in the sphere of the capital-producing industries, seems very remote indeed.

<sup>1</sup> For the figures of this diagram which are repeated in Table X. in the Appendix, see Board of Trade, *Statistical Tables and Charts*, Cmd. 4954, 1909, pp. 97 and 104.

## CHAPTER XVII

# THE INFLUENCE OF TRADE CYCLES ON THE DETERMINATION OF PRICES AND INCOME, AND ON CAPITAL CREATION

### § 70 *The Prices of Commodities*

TURNING now from the concrete processes in the sphere of production to the process of exchange, we have first to consider the influence of trade cycles upon the determination of prices. For this purpose we must at first confine ourselves to materials and consumption goods, the prices of which are precisely the prices for the use of them. We cannot deal until a later stage with the determination of the prices of those durable goods which are fixed capital, as we have already seen that this is a complicated phenomenon in which the price of the capital-disposal, or the rate of interest, plays a part.

The commodities to be considered here fall into two main categories: materials of fixed capital and other commodities. Let us see how the prices of the goods in these two groups are determined during the phases of the trade cycle. The course of prices since 1871, according to English statistics, for three of the most important materials, namely, pig-iron, bricks, and timber, is shown in the diagram (Fig. 16).<sup>1</sup> The prices are calculated as percentages of the 1900 prices. It is seen that the maximum prices stand out sharply, and that, in general, they coincide with the turning years of the trade cycle. During periods of trade boom we find, as a rule, a rise in the prices of the materials of fixed capital. This is a generally recognised phenomenon, and can be observed in all countries.

It is not sufficient to know, however, that the movements of the trade cycle influence the prices of the materials of fixed capital.

<sup>1</sup>The figures are reproduced in Table XI. in the Appendix, Board of Trade, Cmd. 4954, 1909, pp. 184 and 190.



We must discover whether the determination of the prices of other goods depends in the same way and to the same extent upon the trade cycle. Unfortunately, different index numbers for the materials of fixed capital and for other commodities have not been

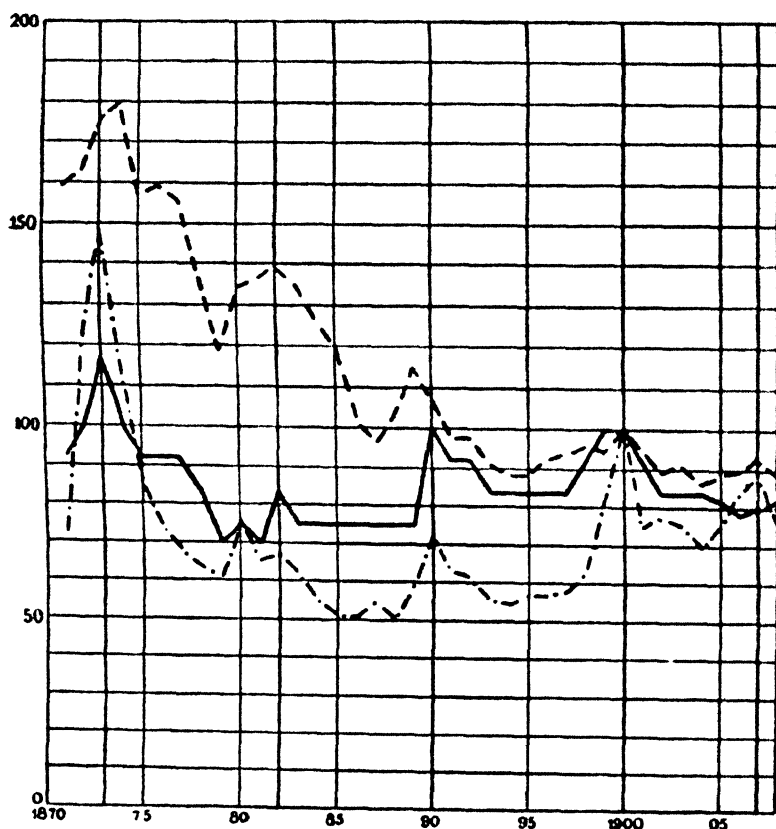


FIG. 16.—CURVES REPRESENTING THE INDICES OF THE PRICES OF PIG-IRON (— · — · —), BRICKS (————), TIMBER (-----).

published; which is regrettable in view of the extraordinary importance of this division. However, in order to obtain at least an approximate solution to the problem, we can break up the Sauerbeck index number in such a way as to have, on the one hand, the index numbers which Sauerbeck gives for his "minerals" groups, and, on the other hand, the numbers for all his other groups. To

eliminate the disturbing influence of the fluctuations in the gold output, we shall divide the index number by our figures of the relative quantity of gold.

The index numbers thus obtained for minerals and other commodities form the basis of the accompanying diagram (Fig. 17).<sup>1</sup> The thick black curve indicates the fluctuations in the prices of minerals, while the dotted curve indicates those of the other commodities. A glance at the diagram shows how much more clearly the movements of the trade cycle are reflected in the prices of minerals than in those of other commodities. The rise in prices of minerals during a boom is usually very steep, and is followed by a fall which is just as pronounced. Other commodities show similar movements, though essentially of a modified nature.

The movements in the prices of commodities under the influence of trade cycles, which we have examined in the case of the free trade English market, should be characteristic of the world market as a whole. We should certainly reach the same conclusion if we were to make a similar analysis of the German index number of prices.

We thus find that even in the sphere of the determination of prices the movements of the trade cycle have a very intimate connection with the production of fixed capital. This confirms the conclusions we reached in our investigations regarding the influence of trade cycles on production and labour. But we can draw even more important conclusions from the movement of prices during the various phases of the trade cycle.

We find, first, that the trade boom causes a rise in prices not only of the materials of fixed capital, but also of other commodities. The rise in prices of the materials of fixed capital is not offset, as one might perhaps expect, by a reduction in the prices of other goods. What is noticeable is not merely a relative change in the prices of various commodities, but, in fact, a general rise in the price-level. This is not due to the fact that the rise in the prices of materials of fixed capital outweighs a contrary movement in the

<sup>1</sup> The figures are reproduced in Table XII. of the Appendix.

prices of other commodities, but that the group of "other commodities" shares, though to a much slighter extent, in the general advance in prices. This general advance cannot be attributed to

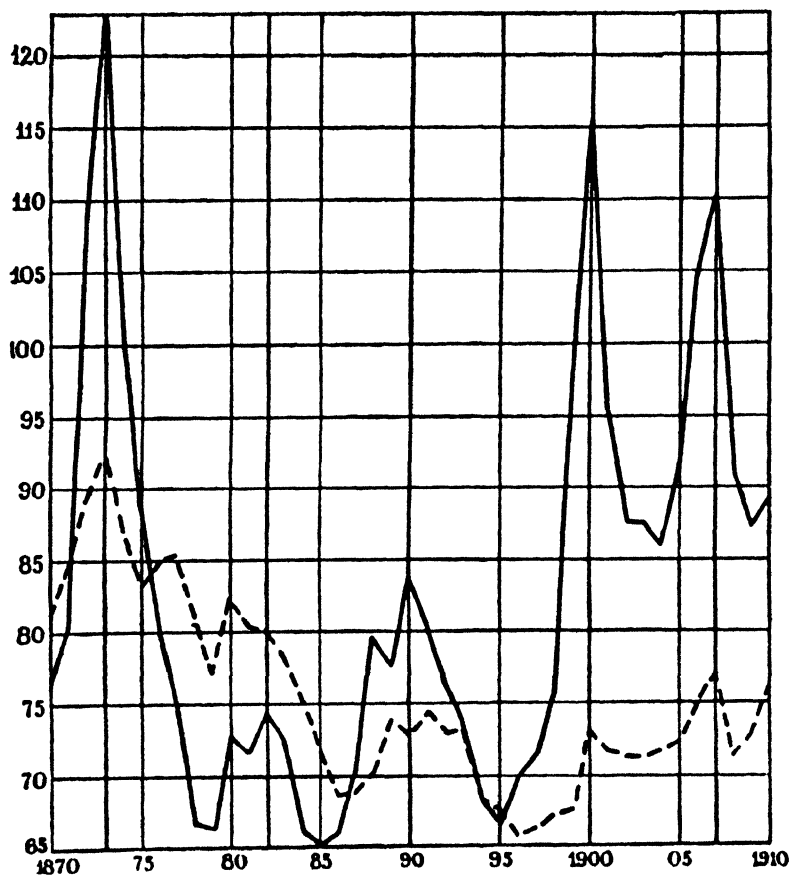


FIG. 17.—SAUERBECK INDEX NUMBERS DIVIDED BY THE RELATIVE STOCK OF GOLD. — MINERALS, - - - - - OTHER COMMODITIES.

changes in the gold supply, for it is still manifest in our diagram, where we have eliminated the influence upon prices of changes in the gold supply. We must conclude, therefore, that the trade cycle has a special influence in the purely monetary sphere.

We have already settled what this influence is (§ 55). During a trade boom, there is a rise not only in the prices of goods, but also

in the volume of actual transactions, and consequently in the whole volume of payments. This increased volume of payments is made possible partly through an acceleration in the circulation of existing means of payment and partly through an increase in the means of payment issued by the banks. The increased velocity of circulation of the means of payment is a direct effect of the greater vitality of trade which characterises a boom. But the ampler provision of means of payment, on the other hand, implies a definite co-operation on the part of the banks, and thus depends on this co-operation – particularly on the interest policy of the banks. The trade boom means accordingly not a mere change in the relative prices of goods based on the conditions of the market, but also a definite rise in the general price-level which can be explained only as an outcome of a superabundant issue of means of payments by the banks.

Secondly, the extraordinary height which the prices of materials of fixed capital reach during a trade boom points to a great scarcity of these materials. Although they are produced on a large scale, the demand for them can only be satisfied if it is restricted by the extremely high prices. The increased production of materials of fixed capital during the boom does not signify overproduction. On the contrary, during a trade boom there is a real, and by no means a merely speculative, demand for the materials of fixed capital, which originates from the producers of fixed capital themselves. At the peak of a trade boom, this demand, as a rule, is considerably in excess of the supply, and therefore equilibrium has to be achieved by means of a rise in prices. This fact is also confirmed by the market reports during any trade boom – that is, scarcity of materials puts a brake on the increase in the production of fixed capital.

Thirdly, during a trade boom a certain scarcity of those factors of production which are employed in the production of the materials of fixed capital must always exist. When the prices of these materials rise rapidly, as is usually the case, the producers will, in these circumstances, undoubtedly do their utmost to derive the maximum profit from the favourable trade movement. If, however, the market

is inadequately supplied for some considerable time, this may be explained by the fact that the factors of production are functioning to their full capacity. This applies equally to labour and to the durable means of production. As regards the workers, we have already shown that during a trade boom the industries we are considering experience a shortage of labour that can only be partially met by working overtime. We have seen, for instance, in the working of the transport system, that the durable means of production are used to the fullest extent. But the steady rise in the prices of the products of these industries clearly proves that their productive capacity is, in general, exercised to the full. Thus, during the trade boom there are no more workers or durable material means of production than are needed for the production of that quantity of materials of fixed capital for which there is an effective demand.

This is particularly true of the production of pig-iron. During a trade boom the existing blast furnaces, mines, transport equipment, etc., cannot produce a greater quantity of pig-iron than they have actually produced. The peaks of the curves on the diagram (Fig. 14) indicate the maximum production that can be achieved with the existing durable material means of production. The productive capacity that is attained at the height of the trade boom remains possible throughout the subsequent depression, and is the standard by which the actual production must be judged if we wish to have a definite idea of the falling-off in employment during the depression.

We can use the monthly index numbers of the prices of commodities in Germany in order to obtain an accurate idea of the times when price movements took place during recent trade cycles.<sup>1</sup> For the group of articles referred to as "metals," the index number rose from 123.83 in February, 1906, to a maximum of 163.35 in January, 1907, to fall again to a minimum of 119.31 in July, 1908. This fall in prices did not take place steadily. In the first of the three half-years, that is up to July, 1907, the fall in prices was 8.26, whereas in the second half of the second year it

<sup>1</sup> Pohle, *Monatliche Übersichten*.

was 29.88, and in the second half of the third year it was 5.90. We see, therefore, that the greatest fall in prices occurred in the second half of 1907, and was most pronounced during the last quarter of the year. The lowest figure for 1906 – that quoted for February – remained the minimum until December, 1907. The decline from the highest point that prices reached during the boom began quite a considerable time before the crisis (October, 1907), but prices as a whole did not fall to a normal level until after the crisis. Similarly, the index number reached a maximum of 166.27 in October, 1912, whereas that particular trade boom lasted till the autumn of 1913, when the fall in prices also took place for the most part (154.20 in September to 137.05 in December).

The total index number rose from 109.33 in February, 1906, to 122.40 in July, 1907, and then fell to 107.79 in December, 1908. From this point it again rose to a maximum of 132.54 in May, 1912. We can see that the prices of metals were more markedly affected during the trade cycles than the total index figures.

Similar conclusions may also be reached with regard to the United States of America. The monthly average price of Bessemer pig-iron in Pittsburg<sup>1</sup> rose from a minimum of 18.10 in May, 1906, to a maximum of 24.27 in June, 1907, and fell to a minimum of 15.71 in October, 1908. It is very remarkable that the violent crisis of the autumn of 1907 sent the price of pig-iron down only to 19.34 (December, 1907); this price had not been reached in the first half-year of 1906, and was only exceeded in September, 1906, during a period of marked trade activity. The next trade boom raised the price again to a maximum of 18.15, a figure reached in December, 1912.

We have thus established the fact that high, or at least good, prices are paid for the materials of fixed capital up to the last moment of a trade boom, and even for a certain time afterwards. The turning point in the movement of the prices of these materials is reached a considerable time before the crisis begins, and may serve as a sure indication of the approaching end of the upward trend of trade. These prices reach their minimum only in the course of the slump.

<sup>1</sup> Ibid.

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From this minimum point there is a more or less steady upward movement, until a new maximum is reached a few months before the next period of depression sets in.

### § 71 Wages

The average wage per shift of a coal-hewer in the Dortmund area has been subject to the following variations since 1872, taking only maxima and minima:

| <i>Year.</i> |    |    | <i>Marks.</i> | <i>Year.</i> |    |    | <i>Marks.</i> |
|--------------|----|----|---------------|--------------|----|----|---------------|
| 1872         | .. | .. | 4.50          | 1893         | .. | .. | 3.71          |
| 1873         | .. | .. | 5.00          | 1900         | .. | .. | 5.16          |
| 1879         | .. | .. | 2.55          | 1902         | .. | .. | 4.57          |
| 1883         | .. | .. | 3.15          | 1907         | .. | .. | 5.98          |
| 1886         | .. | .. | 2.92          | 1909         | .. | .. | 5.33          |
| 1891         | .. | .. | 4.08          |              |    |    |               |

The dependence of this wage upon trade cycles is evident. The highest wages coincide with the transition years, though sometimes, as in 1883 and 1891, a noticeable delay occurred in this respect. In order to fix times of the changes in wages more closely we can resort to the following data concerning the average earnings per shift of all the miners in the mining district of Dortmund (the figures indicate the number of pfennigs in excess of the sum of 4 marks)<sup>1</sup>:

| <i>Year.</i> | <i>Quarter.</i> | <i>Pfennigs.</i> | <i>Year.</i> | <i>Quarter.</i> | <i>Pfennigs.</i> |
|--------------|-----------------|------------------|--------------|-----------------|------------------|
| 1906         | 1st             | 17               | 1909         | 1st             | 56               |
|              | 2nd             | 26               |              | 2nd             | 45               |
|              | 3rd             | 43               |              | 3rd             | 48               |
|              | 4th             | 59               |              | 4th             | 48               |
| 1907         | 1st             | 70               | 1910         | 1st             | 48               |
|              | 2nd             | 81               |              | 2nd             | 51               |
|              | 3rd             | 94               |              | 3rd             | 57               |
|              | 4th             | 99               |              | 4th             | 61               |
| 1908         | 1st             | 87               | 1911         | 1st             | 64               |
|              | 2nd             | 82               |              | 2nd             | 66               |
|              | 3rd             | 82               |              | 3rd             | 72               |
|              | 4th             | 76               |              | 4th             | 75               |

<sup>1</sup> Pohle, *Bevölkerungsbewegung, Kapitalbildung und periodische Wirtschaftskrisen* 1902, § 70. The latest figures are taken from the *Reichsarbeitsblatt*.

The highest figure, 4.99 marks, was reached in the fourth quarter of 1907. There was a considerable decrease in the figure in 1909.

Thus wages seem to possess a certain power of resistance to the effect of a trade depression. Statistics of wages per shift do not give us an accurate idea of the real earnings of labour. We know that the number of shifts per worker varies considerably during trade cycles. From this we may assume that the actual average wage decreases more rapidly when the trade cycle enters upon the downward trend than the rates of time-pay suggest.

In Belgium, Mahaim has obtained index numbers of wages by dividing the whole annual amount paid out as wages by the number of workers.<sup>1</sup> He thus found for the whole class of coal-miners in Belgium the following variations, again giving only the maxima and minima:

|      |    |    |    |    |      |    |    |    |     |
|------|----|----|----|----|------|----|----|----|-----|
| 1883 | .. | .. | .. | 84 | 1893 | .. | .. | .. | 74  |
| 1886 | .. | .. | .. | 65 | 1900 | .. | .. | .. | 118 |
| 1890 | .. | .. | .. | 93 |      |    |    |    |     |

The figures apply to from 103,000 to 135,000 workers, and bring out very clearly the fluctuations in yearly wages. The wages of the 8,000-10,000 workers of the Cockerill Works actually fluctuated from:

|      |    |    |    |    |      |    |    |    |     |
|------|----|----|----|----|------|----|----|----|-----|
| 1883 | .. | .. | .. | 86 | 1894 | .. | .. | .. | 85  |
| 1885 | .. | .. | .. | 74 | 1901 | .. | .. | .. | 114 |
| 1890 | .. | .. | .. | 93 |      |    |    |    |     |

The British Board of Trade publishes statistics of wages in the most important industries (coal-mining, building, engineering, and textile industries). These figures, given below, are based mainly on the rates of pay accepted by the trade unions, showing the maxima and minima reached since 1874<sup>1</sup>:

|      |    |    |    |       |      |    |    |        |
|------|----|----|----|-------|------|----|----|--------|
| 1874 | .. | .. | .. | 91.36 | 1895 | .. | .. | 88.23  |
| 1879 | .. | .. | .. | 81.16 | 1900 | .. | .. | 100.00 |
| 1882 | .. | .. | .. | 84.41 | 1904 | .. | .. | 95.56  |
| 1886 | .. | .. | .. | 81.12 | 1907 | .. | .. | 101.79 |
| 1891 | .. | .. | .. | 91.13 | 1909 | .. | .. | 99.41  |

<sup>1</sup> *Journal of the Royal Statistical Society*, 1904.

<sup>2</sup> Board of Trade, *British and Foreign Trade and Industry*, Cmd. 4954, p. 212. (*Fourteenth Abstract of Labour Statistics*.)



We see that the highest wages again occur in the turning years, though in 1891 there was the same kind of delay that we observed in the case of the wages of German miners.

The Board of Trade also publishes periodically statistics regarding the increase in the total weekly wages in industrial occupations due to changes in wages. The following figures show, in thousands of pounds, this increase (+) or decrease (-)<sup>1</sup>:

| <i>Year.</i> | <i>£1000's</i> | <i>Year.</i> | <i>£1000's</i> |
|--------------|----------------|--------------|----------------|
| 1894         | - 45           | 1902         | - 73           |
| 1895         | - 28           | 1903         | - 38           |
| 1896         | + 27           | 1904         | - 39           |
| 1897         | + 32           | 1905         | - 2            |
| 1898         | + 81           | 1906         | + 58           |
| 1899         | + 91           | 1907         | + 201          |
| 1900         | + 209          | 1908         | - 59           |
| 1901         | - 77           | 1909         | - 69           |

The careful investigations made by Bowley and Wood on the wages of English workers have furnished us with the following facts. The average wage since 1850 in the shipbuilding and engineering industries shows the following maxima and minima (the index number for 1900 equals 100)<sup>2</sup>:

|      |    |    |    |    |      |    |    |    |     |
|------|----|----|----|----|------|----|----|----|-----|
| 1850 | .. | .. | .. | 68 | 1882 | .. | .. | .. | 88  |
| 1854 | .. | .. | .. | 76 | 1886 | .. | .. | .. | 84  |
| 1860 | .. | .. | .. | 73 | 1890 | .. | .. | .. | 93  |
| 1866 | .. | .. | .. | 79 | 1893 | .. | .. | .. | 91  |
| 1867 | .. | .. | .. | 77 | 1899 | .. | .. | .. | 100 |
| 1877 | .. | .. | .. | 88 | 1903 | .. | .. | .. | 99  |
| 1879 | .. | .. | .. | 83 |      |    |    |    |     |

The index number of the average weekly wage in the cotton industry shows the following fluctuations since 1863<sup>3</sup>:

|      |    |    |    |     |      |    |    |    |      |
|------|----|----|----|-----|------|----|----|----|------|
| 1863 | .. | .. | .. | 62  | 1884 | .. | .. | .. | 85½  |
| 1868 | .. | .. | .. | 74  | 1886 | .. | .. | .. | 83½  |
| 1869 | .. | .. | .. | 72½ | 1901 | .. | .. | .. | 100½ |
| 1877 | .. | .. | .. | 88  | 1903 | .. | .. | .. | 99½  |
| 1879 | .. | .. | .. | 78½ | 1906 | .. | .. | .. | 107½ |

<sup>1</sup> *Abstract of Labour Statistics.*

<sup>2</sup> *Journal of the Royal Statistical Society*, 1906, p. 185. The figures relate to the whole United Kingdom.

<sup>3</sup> *Journal of the Royal Statistical Society*, 1910, p. 599.

Wages in the cotton industry remained unchanged after the depression of 1901, but in the shipbuilding and engineering industries they suffered a definite, though not a large, reduction.

We need not quote any further figures. Although even the most accurate statistics of wages may be liable to error, the facts given regarding the short period of a trade cycle should give a good idea of the trend of the level of wages. We may also regard as a settled fact that a trade cycle always leads to a rise in the wages, whereas a depression is usually accompanied by a fall. These variations affect not only wages in the capital-producing industries, but also, though perhaps to a less noticeable degree, wages in other industrial occupations, and even, according to English statistical data, the wages of agricultural workers.

It would be exceedingly difficult to compare wages in different occupations in order to prove the dependence of wages upon trade cycles. Besides, the conclusions arrived at would hardly be relevant to our purpose. The results already obtained are of great importance for a correct understanding of the nature of trade cycles. Rising wages are paid only when an increasing scarcity of labour make them necessary. We may conclude from the statistics of wages that during a trade boom there is a perceptible scarcity of labour. This is a valuable confirmation of the results already obtained in earlier sections in relation to the supply of, and demand for, labour.

The rise in the general level of wages during a trade boom is in itself a phenomenon of great practical importance, materially influencing the whole nature of the trade boom. This increase clearly means an increased purchasing power for the most essential articles of consumption on the part of the working-classes, and is thus an important factor in determining the production and pricing of these articles.

The question whether *real wages* do or do not rise during a trade boom has often been discussed. We cannot give a definite answer to this question, because the issue depends upon which of the tendencies at work get the upper hand. With the aid of statistics, we can give many examples of every conceivable relationship between the increase and decrease in wages on the one hand, and

the rise and fall in prices on the other. We may, under these circumstances, dispense with a more detailed investigation of the changes in real wages.

### § 72 *Income*

The study of the influence of trade cycles on the national income is, naturally, a very important aspect of our subject from the practical point of view, but it also affords an opportunity for observations of some theoretical importance. In order, however, to clarify the problem from every point of view, we must not be content with a survey of the changes in the national income as a whole, but, where we can, must also separately consider the various chief parts of this income.

In such an inquiry we must scrutinise not only the statistics relating to wages, but also those of income tax. As the income of any year is, in practice, mostly subject to income tax only in the following year, we should bear in mind, in the course of our researches, that the yearly income is best computed on the basis of the subsequent year's income tax statistics. This method is far from being infallible, but, nevertheless, it gives, on the whole, the closest idea of the real position.

In England the working-classes were not subject to income tax, and, therefore, the information we can derive from the income tax returns concerns only the income of the middle and upper classes. In order to get an idea of the changes in the income of the working-classes we must refer to the statistics relating to wages. The gross amount of income subject to tax varied from 1870 onwards as follows<sup>1</sup>:

| <i>Year.</i> | <i>£ Millions.</i> | <i>Year.</i> | <i>£ Millions.</i> |
|--------------|--------------------|--------------|--------------------|
| 1870         | 482                | 1893         | 694 min.           |
| 1874         | 579 max.           | 1899         | 868                |
| 1875         | 570 min.           | 1900         | 902                |
| 1883         | 631 max.           | 1901         | 915                |
| 1884         | 629 min.           | 1902         | 938                |
| 1891         | 718 max.           | 1905         | 979                |

We find that the maximum amounts of income coincide with the

<sup>1</sup> Board of Trade, Cmd. 4954, 1909, p. 136.

peaks of trade booms, though they are generally a little retarded. The decline during the period of depression is, in every case, very small, and amounts, at the most, to about 3 per cent. (1891-3). After the trade boom of 1900 there was no decrease at all, but only a retardation in the upward movement.

The influence exercised by the trade cycles upon the classes of incomes which the English income tax law groups under Schedule D is much stronger. The variations are as follows<sup>1</sup>:

| <i>Year.</i> | <i>£ Millions.</i> | <i>Year.</i> | <i>£ Millions.</i> |
|--------------|--------------------|--------------|--------------------|
| 1870         | 203                | 1893         | 341 min.           |
| 1874         | 272 max.           | 1899         | 466                |
| 1875         | 257                | 1900         | 488                |
| 1878         | 250 min.           | 1901         | 492                |
| 1883         | 293 max.           | 1902         | 502                |
| 1885         | 286 min.           | 1907         | 566 max.           |
| 1890         | 369 max.           | 1908         | 559                |
| 1891         | 367                |              |                    |

In 1891 another small group of incomes was included under Schedule D, though this did not prevent the income already taxed from falling. The real diminution in income from 1890-3 was, therefore, rather greater than is shown by the figures. We find that the fall in Schedule D incomes, reckoned as a percentage, is much greater than that in the total income – in fact, many times greater. Schedule D is not comprised of a homogeneous class of incomes. It includes certain salaries and dividends, though it should consist primarily of income derived from business. Thus we may conclude from the available data that income from business undertakings is affected by trade cycles more than any other class of income. When we consider the different types of income from business mentioned in the statistics, by far the greatest fluctuations are found, characteristically enough, in incomes from iron and steel works, which have varied as follows (in thousands of pounds)<sup>2</sup>:

| <i>Year.</i> | <i>£1,000's.</i> | <i>Year.</i> | <i>£1,000's.</i> |
|--------------|------------------|--------------|------------------|
| 1890         | 2,979            | 1904         | 2,684            |
| 1892         | 1,832            | 1907         | 5,101            |
| 1900         | 6,600            | 1909         | 3,233            |

<sup>1</sup> From the same source. Figures for 1907 and 1908 are taken from the *Statistical Abstract*.

<sup>2</sup> *Statistical Abstract*.

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The table which follows is based on the Prussian income tax statistics, the figures referring partly to incomes ranging from 900 to 3,000 marks, and partly to incomes over 3,000 marks, classified according to the source of income. The figures are given in millions of marks.

INCOME OF ACTUAL TAXPAYERS IN PRUSSIA  
(in millions of marks).

| Year. | Income from<br>900-3,000<br>Marks. | From<br>Investments. | Incomes over 3,000 Marks. |   |                        |
|-------|------------------------------------|----------------------|---------------------------|---|------------------------|
|       |                                    |                      | From<br>Land.             | From Com-<br>merce, Trade<br>and Mines. | From Oc-<br>cupations. |
| 1891  | 2,912                              | 892                  | 755                       | 982                                     | 594                    |
| 1892  | 2,969                              | 887                  | 746                       | 960                                     | 615                    |
| 1893  | 3,027                              | 888                  | 742                       | 954                                     | 633                    |
| 1894  | 3,134                              | 904                  | 739                       | 963                                     | 660                    |
| 1895  | 3,197                              | 912                  | 855                       | 1,019                                   | 685                    |
| 1896  | 3,318                              | 943                  | 785                       | 1,106                                   | 729                    |
| 1897  | 3,472                              | 966                  | 816                       | 1,206                                   | 818                    |
| 1898  | 3,685                              | 1,081                | 867                       | 1,304                                   | 892                    |
| 1899  | 4,011                              | 1,141                | 921                       | 1,418                                   | 964                    |
| 1900  | 3,328                              | 1,208                | 968                       | 1,497                                   | 1,037                  |
| 1901  | 4,460                              | 1,237                | 996                       | 1,475                                   | 1,084                  |
| 1902  | 4,616                              | 1,243                | 1,007                     | 1,424                                   | 1,132                  |
| 1903  | 4,895                              | 1,300                | 1,049                     | 1,439                                   | 1,189                  |
| 1904  | 5,209                              | 1,380                | 1,109                     | 1,507                                   | 1,261                  |
| 1905  | 5,551                              | 1,473                | 1,171                     | 1,623                                   | 1,354                  |
| 1906  | 6,592                              | 1,610                | 1,185                     | 1,744                                   | 1,500                  |
| 1907  | 7,344                              | 1,702                | 1,233                     | 1,833                                   | 1,622                  |
| 1908  | 7,642                              | 1,731                | 1,269                     | 1,809                                   | 1,732                  |
| 1909  | 7,676                              | 1,797                | 1,348                     | 1,859                                   | 2,052                  |
| 1910  | 8,078                              | 1,915                | 1,426                     | 1,946                                   | 2,205                  |

The income derived from business, given under the heading "Commerce, Trade, and Mines," clearly decreased from 1891 to 1893, and only rose above its former height in 1895. It then increased rapidly during the trade boom of 1900, and fell considerably for three years in the subsequent slump. It again rose rapidly in the trade boom of 1907, and once more declined a little in 1908. The increase during the years 1896-9 amounted regularly to about 100 million marks per annum, that is, 8-10 per cent., but there was

a fall in 1900. In 1905 and 1906, too, there was a considerable increase in this type of income, but a considerable reduction took place in 1907. The maximum amounts of income from business also occur in the turning years, though the greatest increase occurs in the earlier years of the trade boom. The other classes of income show no fall in the depressions after 1900 and 1907. In the depression following 1891 the income derived from investments underwent a slight reduction, and income from land a rather greater reduction, though this must be attributed to the particularly bad state of agriculture at the time. Thus we can see that the influence of trade cycles is by far the greatest in the case of income from business undertakings. In the other classes of income the trade slumps are felt only to the extent of a slight modification in the rate of increase.

The following income tax statistics of Saxony have the great advantage of including incomes down to 400 marks. The variations in the various classes of income are as follows<sup>1</sup>:

RESULTS OF THE ASSESSMENTS FOR INCOME TAX IN SAXONY  
(in millions of marks).

| <i>Year.</i> | <i>Landed<br/>Property.</i> | <i>Investment<br/>Income.</i> | <i>Salaries<br/>and Wages.</i> | <i>Commerce<br/>and Trade.</i> | <i>Total<br/>Income</i> |
|--------------|-----------------------------|-------------------------------|--------------------------------|--------------------------------|-------------------------|
| 1877         | 214                         | 109                           | 334                            | 357                            | 1,014                   |
| 1878         | 218                         | 112                           | 365                            | 350                            | 1,045                   |
| 1879         | 222                         | 116                           | 380                            | 353                            | 1,071                   |
| 1880         | 225                         | 123                           | 403                            | 360                            | 1,111                   |
| 1881         | 229                         | 129                           | 422                            | 371                            | 1,151                   |
| 1882         | 233                         | 135                           | 450                            | 378                            | 1,196                   |
| 1883         | 233                         | 142                           | 465                            | 395                            | 1,236                   |
| 1884         | 237                         | 151                           | 492                            | 408                            | 1,288                   |
| 1885         | 241                         | 158                           | 521                            | 418                            | 1,337                   |
| 1886         | 242                         | 162                           | 552                            | 430                            | 1,378                   |
| 1887         | 247                         | 168                           | 584                            | 444                            | 1,443                   |
| 1888         | 255                         | 178                           | 619                            | 468                            | 1,519                   |
| 1889         | 263                         | 187                           | 665                            | 496                            | 1,611                   |
| 1890         | 271                         | 200                           | 701                            | 517                            | 1,689                   |
| 1891         | 277                         | 205                           | 714                            | 516                            | 1,713                   |
| 1892         | 283                         | 214                           | 738                            | 521                            | 1,756                   |
| 1893         | 287                         | 220                           | 771                            | 528                            | 1,806                   |
| 1894         | 289                         | 229                           | 800                            | 541                            | 1,860                   |

<sup>1</sup> *Jahrbuch für das Königreich Sachsen.*

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| <i>Year.</i> | <i>Landed<br/>Property.</i> | <i>Investment<br/>Income.</i> | <i>Salaries<br/>and Wages.</i> | <i>Commerce<br/>and Trade.</i> | <i>Total<br/>Income.</i> |
|--------------|-----------------------------|-------------------------------|--------------------------------|--------------------------------|--------------------------|
| 1895         | 293                         | 237                           | 851                            | 562                            | 1,943                    |
| 1896         | 300                         | 250                           | 913                            | 596                            | 2,059                    |
| 1897         | 307                         | 263                           | 972                            | 626                            | 2,168                    |
| 1898         | 318                         | 276                           | 1,041                          | 653                            | 2,288                    |
| 1899         | 329                         | 289                           | 1,103                          | 682                            | 2,403                    |
| 1900         | 377                         | 291                           | 1,144                          | 693                            | 2,465                    |
| 1901         | 343                         | 300                           | 1,158                          | 700                            | 2,502                    |
| 1902         | 349                         | 304                           | 1,182                          | 712                            | 2,548                    |
| 1903         | 356                         | 303                           | 1,234                          | 703                            | 2,597                    |
| 1904         | 365                         | 307                           | 1,283                          | 720                            | 2,675                    |
| 1905         | 373                         | 321                           | 1,338                          | 738                            | 2,770                    |
| 1906         | 380                         | 333                           | 1,416                          | 775                            | 2,904                    |
| 1907         | 388                         | 348                           | 1,515                          | 813                            | 3,064                    |
| 1908         | 401                         | 364                           | 1,577                          | 846                            | 3,188                    |
| 1909         | 413                         | 379                           | 1,644                          | 873                            | 3,309                    |

The total income in Saxony did not, as we can see, suffer the slightest reduction, but the income derived from commerce and trade fell slightly in 1891 and 1903. A corresponding decrease occurred in respect of investment income in 1903, alone among all the other classes of income, and this only to a small degree. Income from landed property, together with salaries and wages, continued to grow, even during periods of depression, though at a slower rate. During the trade boom which culminated in 1900, the greatest rise in income from business occurred during the years 1896 to 1899. This increase slackened to some extent in the subsequent years, until in 1903 it was completely suspended.

The income figures for Sweden are very characteristic. Income from agriculture, landed and house property, as well as incomes below 500 kronor (about £27), are exempt from voluntary assessment. The estimate of income from business, from which income from agriculture is excluded, is arrived at on a basis of 5 per cent. of the capital value of the land, premises, etc., of the aggregated undertakings, and this sum is deducted as a profit from the total value of capital. The increase or decrease (–) in income from business and from salaries and wages is given below (in millions of kronor), as compared with the previous year<sup>1</sup>:

<sup>1</sup> From *Generalisammandrag öfver Bevilningar*.

INCREASE AND DECREASE ( - ) OF INCOME VOLUNTARILY ASSESSED FOR  
INCOME TAX IN SWEDEN  
(in millions of kronor).

| <i>Year.</i> | <i>Service<br/>(including Pensions).</i> | <i>Business and<br/>Professions.</i> |
|--------------|--|--------------------------------------|
| 1883         | 0.3                                      | -0.9                                 |
| 1884         | 6.2                                      | 9.7                                  |
| 1885         | 3.9                                      | -7.7                                 |
| 1886         | 3.6                                      | 1.7                                  |
| 1887         | 2.7                                      | 3.0                                  |
| 1888         | 2.8                                      | 23.1                                 |
| 1889         | 5.7                                      | 24.4                                 |
| 1890         | 7.7                                      | -1.0                                 |
| 1891         | 7.0                                      | -0.8                                 |
| 1892         | 13.3                                     | -7.8                                 |
| 1893         | 7.3                                      | 8.8                                  |
| 1894         | 6.6                                      | 10.5                                 |
| 1895         | 10.4                                     | 20.1                                 |
| 1896         | 12.7                                     | 29.3                                 |
| 1897         | 20.4                                     | 41.0                                 |
| 1898         | 26.7                                     | 27.9                                 |
| 1899         | 21.5                                     | 32.0                                 |
| 1900         | 29.7                                     | 15.9                                 |
| 1901         | 15.1                                     | -15.0                                |
| 1902         | 43.1                                     | 11.3                                 |
| 1903         | 34.5                                     | 27.5                                 |
| 1904         | 26.3                                     | 20.2                                 |
| 1905         | 29.5                                     | 40.1                                 |
| 1906         | 48.2                                     | 73.7                                 |
| 1907         | 123.1                                    | 31.7                                 |
| 1908         | 56.8                                     | -37.9                                |
| 1909         | 10.4                                     | -22.1                                |

The large increase in wages in 1902 and 1907 must be ascribed to the introduction and, later on, the extension of self-assessment. This is also true to some extent regarding the increase in income from business in 1902.

We find that while income from business has decreased during every depression, wages have steadily risen. The chief increase in income from business always takes place in the early years of the upward movement of a trade cycle, whereas when the trade boom proper is taking place, the increase in the income from business is already somewhat reduced. In the turning years themselves there is



a decrease, or at least a considerable weakening of the upward tendency. The increase in wages is always substantially smaller than the increase in income from business at the beginning of an upward trend, and reaches its highest point only during the trade boom proper. During the turning years and the subsequent depressions wages show a steady increase. There is thus an important difference between the income of the entrepreneurs and that of the workers, in that the former obtains the benefit of the earlier years of the increased activity in trade, whilst the latter is favoured during the actual trade boom and perhaps still more in the depressions.

We thus find that the relatively steady increase in wages, especially in the case of Saxony and Sweden, where the assessment for income tax includes the large class of industrial workers, is a phenomenon of great significance, and probably of fairly general occurrence. The wages of the workers represent, together with the income derived from land which also increases comparatively steadily, a real burden upon enterprise, for if they continue to increase in bad times they are bound to bring down the profits of entrepreneurs. The beginning of a trade boom is a particularly favourable time for the profits of entrepreneurs. They increase rapidly, as a rule, but this is soon counteracted by the steady rise in wages. As soon as the rate of increase in profits begins to slow up, or even disappears, the turning point of the trade cycle is at hand. It is obvious that the profits of entrepreneurs must form a larger part of the total national income at the beginning of a trade boom than at the peak. During a depression the income of entrepreneurs and the remaining shares of the national income are subject to inverse variations.

Our investigations of the real processes of production led us to distinguish only between periods of advance and decline. A closer analysis of the fixing of prices and income makes it necessary, as we now see, to divide the former period into two stages. We may call the first of these stages *the period of the beginning of the advance*, and the second the *trade boom proper* in the narrower meaning of the term.

§ 73 *Consumption*

We have seen that the increased production of fixed capital, which is the chief feature of the trade boom, brings about an increase in the number of workers, and usually an increase in hours of work. The new workers are recruited from among the ranks of the unemployed, from young people hitherto not employed, or from the agricultural population. In each case the employment of fresh labour and the increase in working hours denote the creation of new income. This income represents an additional purchasing power, and, as it is doubtless absorbed for the most part in consumption, it creates new demands upon the industries which supply the working-class with ordinary necessities. Those industries are to some extent also capital-producing – for instance, in so far as they help to provide new houses for the workers. The industries which work along mass production lines must also be considered here. As there is an increased activity in all these industries on account of the greater demand, new workers are required and longer hours must be worked. This steadily increasing demand for labour in the capital-producing industries, as well as in mass production industries, gradually forces wages up, and thereby increases the purchasing power of the working-classes.

This revival of industrial activity is especially favourable to the textile industry. The working-classes demand for clothing is particularly elastic. When times are bad the worker must remain content with satisfying his need of food and a roof over his head, while clothes must be worn as long as possible. Hence a demand for clothing at the commencement of the trade boom is so much greater, and the textile industry enjoys a brisk demand. We have already shown that the textile industry is particularly sensitive to the great movements of the trade booms. This fact is substantiated by the figures of textile workers insured through their trade unions in Germany, and by the trend of cotton yarn production in England.

The revival of industrial activity, which begins in the capital-producing industries, spreads also, though in a progressively declining degree, to other branches of industry. This increases the

money income not only of the working classes, but also of other sections of the population. That is why the trade boom has so deep a significance for the entire community.

The increased production of consumption goods that obviously takes place during a trade boom is naturally consumed. This proves that consumption really increases during a trade boom. Production is now, as we can prove statistically, mainly a mass production of standard articles. As there is no doubt that industrial production increases considerably during every trade boom in order to meet the needs of the large number of consumers, we must conclude that the total real income of the working-classes increases in proportion during the trade boom.

The increased purchasing power of the working-classes enables them to purchase a larger quantity of goods. But on the other hand an increased purchasing power leads to a rise in prices. It follows that the real income of the workers does not increase in the same proportion as their money income.

This rise in prices is a fact which we can prove statistically in the case of the principal industrial consumption goods. However, as compared with the increase in the prices of the materials of fixed capital, this increase is entirely a secondary phenomenon, which takes place only in a relatively slight degree. We already know, particularly from the diagram (Fig. 17), that this is the case.

After what has been said, we ought to be able to state with a great degree of certainty that the total real income of the working-classes increases during a trade boom. But this is mainly due to the fact that the new workers employed in industry formerly earned nothing at all, or earned much lower wages in agriculture. With regard to the development of the real income of the individual workers who were already employed in the industry, it is, as we said before in § 71, not possible to give a general answer.

The conclusions arrived at in this section apply only to industrial production. We find that the same tendencies occur in the sphere of agricultural production, but they are modified to a considerable extent by the variable conditions of agriculture, and therefore can rarely be fully realised. The prices of agricultural products, which

normally should rise during a trade boom, may be neutralised by good harvests, or even fall below their former level.

On the other hand, the prices of agricultural products may, owing to bad crops, go up to such an extent that they directly affect wages. There is an interdependence between wages and the amount spent on consumption goods, which in this case would be a cause of the diminution in the real income of the workers. Thus, in the question of the fluctuations of real income, there is the play of certain factors lying outside the movements of the trade cycle, in the sense in which we have used this term. The theory of trade cycles cannot, therefore, furnish a definite answer to this question.

#### § 74 *Capital from Savings*

The total sum of the annual savings of the community can hardly be determined statistically, as a large part of them is, as a rule, used directly in special enterprises. Every employer must, in order to keep his works up-to-date, annually set aside considerable sums out of his income. In the case of limited companies a part of these savings go to build up the "secret reserves," the amount of which is not divulged to the public. In agriculture, too, large sums, which cannot be given in accurate figures, are taken from the annual income in order to improve the land, and for similar purposes. This direct formation of capital by entrepreneurs must, on the whole, be very considerable, but it cannot be included in any statistical calculation of capital-formation.

Private individuals, who are in no way entrepreneurs, are constantly on the look-out for remunerative forms of investment of their savings. A large part is always invested in mortgages, and thus promotes the development of agriculture, and particularly of building. Another part is entrusted to banks of all types, and so indirectly placed at the disposal of production. The third and remaining part goes to pay for new issues of stocks and shares. It is true that certain statistical data are published in connection with the latter two groups of savings, but they are always incomplete and unreliable. We cannot obtain an exact idea from them as

to the amount of total savings, for we never know what the ratio of bank deposits and securities is to the other kinds of savings. Probably this ratio varies considerably in different countries and during different trade cycles. We know also that bank deposits vary a good deal, and play quite different parts in different countries. Similarly, the share issues do not, for various reasons, give a clear idea of the formation of capital. In this respect we observe only that a considerable part of these shares is used to cover floating debts, or to purchase existing real capital, and therefore does not actually increase the capital of the community. Issues, for example, which serve for the conversion of private enterprises into limited companies, or for merging different companies, must not be included in the statistics of the actual formation of capital. We cannot ascertain, moreover, to what extent the shares issued will really be paid for in the current year, and still less whether the payments effected are covered by existing savings or by loans. Indeed, the figures regarding issues of shares show considerably greater fluctuations than can be supposed to occur in the actual formation of capital.

We must not limit our studies of the formation of capital to a single country, but must take into account the important international movements of capital. If we consider all these complications, we may conclude that the figures published regarding the formation of capital do not supply us with reliable information as to the fluctuations of the amount of savings which are offered on the capital market from year to year. We are thus compelled to form in an indirect way an approximate idea of the variations in the formation of capital during different stages of a trade cycle.

We found in § 72 that the national income increases on the whole very steadily, but that it falls a little in a depression, or is, at all events, checked in its rate of increase. In all probability the movements of the trade cycle have a rather more pronounced influence on the formation of capital.

As entrepreneurs are compelled by economic exigencies to save, they put aside, as savings, a part of their profits. The proportion of these savings to profits usually largely exceeds the savings from other groups of income. When the proportion of savings set aside from

the profits of entrepreneurs is greater than the average rate of savings, the community's formation of capital is greater in these times, which are therefore particularly favourable from the entrepreneur's point of view. Such a time is the period at the beginning of renewed trade activity. From this we may assume that at the beginning of a trade boom a relatively large amount of capital is formed. But then, in all probability, the rise in wages and prices brings about an immediate decrease in the formation of capital relatively to the national income. For the working-classes certainly consume a comparatively larger part of their income, particularly when there is a rise in the prices of ordinary necessities. Simultaneously, the income of the entrepreneurs begins to fall owing to the rise in wages, or, at least, the rate of increase is diminished, and thus this important source of new capital tends to be diminished. Thus the end of a trade boom should be characterised by a relative stringency in the supply of capital. It is quite obvious that, during the depression, the entrepreneur's profits can contribute very little to the formation of capital. But during a depression, on account of the lower cost of living, and particularly when the worst times are over, the other classes of income ought to contribute considerably to the formation of capital.

In the light of these considerations, we may assume that the formation of capital is, relatively to the national income, greatest at the beginning of a period of trade revival, that it does not diminish considerably during the trade boom, and that, after being seriously impaired at the time of the crisis, it gradually recovers during the downward phase of the trade cycle.

## CHAPTER XVIII

# THE INFLUENCE OF TRADE CYCLES ON THE CAPITAL MARKET

### § 75 *Supply and Demand*

THE foregoing inquiry has shown that the production of fixed capital is subject to certain variations during the various phases of the trade cycle. During the depression there is a reduction in output and during the boom an increase above the normal. This fact, which is of fundamental importance for the whole theory of trade cycles, is, on the whole, directly confirmed by the data which we have given in connection with production, and also indirectly by our study of the movements of labour and of commodity prices. The chief point is that this effect of trade cycles is peculiar to the production of fixed capital, and is not felt, or at least not to the same extent, in the sphere of production for consumption. From this it follows that during a trade boom the production of fixed capital represents a greater part of the total production than during a depression. In other words, during the boom the total production shifts in the direction of a relatively greater production of fixed capital. During the depression there is a drift in the opposite direction.

Income is divided into what is consumed and what is saved. The first part is employed in purchasing articles of consumption; the other part, the savings, is used to purchase the newly produced real capital. On the capital market the savings appear as supply, and, on the other hand, the real capital produced appears as a demand for capital-disposal.

We must now investigate the changes which the capital market experiences during the various phases of the trade cycle. To get a clear idea of these changes, we will first assume that there is no change in the use of the income, or, in other words, that the ratio of

the income consumed and the income saved remains unchanged. In that case both the income consumed and the newly created capital increase at the same rate as the total income. But during the trade boom the production of fixed capital increases at a faster rate than the total income, and the production of consumption goods at a slower rate. Owing to this a maladjustment occurs between the distribution of production and the distribution of income. In the sphere of consumption income predominates, and the result must be a rise in the prices of goods for consumption. We have already been able to prove that this is really the case. This increase is generally a very moderate one, and is due to the fact that the displacement in the sphere of production is relatively unimportant as regards the production of goods for consumption, which represents the far greater part of the total production. On the capital market production predominates, and there the movements of prices must, therefore, take an opposite direction. These, however, must necessarily be more pronounced, on account of the relatively greater change in the range of capital production. If we regard the capital market as a market on which the fixed capital produced is offered for sale, the prices of the material capital goods must obviously fall in the conditions supposed. This movement will continue until equilibrium is restored between the total value of the newly produced real capital and the income available for the purchase of it. Possibly the upward movement of the prices of consumption goods will be followed by a similar movement in the price of the services of capital. In that case, the ratio of the price of fixed capital to the price of using it will fall, which is equivalent to an increase in the rate of interest.

Again, if we regard the capital market as one in which the supply of, and the demand for, capital-disposal meet, under the conditions assumed the demand will tend to predominate, and the price of capital-disposal will rise, or, in other words, the rate of interest will go up. As securities become capitalised at this higher rate of interest their capital values decline. This reduction in the price of capital goods diminishes the capital-disposal required to produce them to such an extent that equilibrium is soon restored on the capital market.



It is obvious that any displacement in social production in favour of the production of capital, if unaccompanied by a corresponding change in the use of income, must bring about changes in prices which are unfavourable to fixed capital, but favourable to consumption goods. It is only the new prices that can restore equilibrium between income and production in their principal sections.

Depressions must clearly have an opposite effect. As the production of fixed capital decreases relatively to that of consumption goods, the prices of the latter must fall and the prices of goods which are fixed capital must go up – that is to say, the rate of interest must fall.

We must now consider the fluctuation in the formation of capital under the influence of trade cycles. We have seen in the previous chapter that trade cycles have some influence on the use of income, and cause changes in the direction of a rise or a fall in the amount of saving effected. At the beginning of an upward movement in trade, when entrepreneurs' profits have risen rapidly, the creation of capital is comparatively large. Subsequently, a change takes place in the use to which income is put in the direction of increased savings. This raises purchasing power in respect of capital goods, and generally to a greater extent than the production of such goods. Thus, during a period of this kind a general rise in the prices of fixed capital must be expected. The fluctuations in the rate of interest will depend upon the profits made on this capital.

During the real boom, on the other hand, entrepreneurs' profits diminish and the saving tends to fall off, but the production of fixed capital maintains its upward movement, and sometimes even increases in intensity. The stringency of the capital market is accentuated, the prices of capital goods fall, and the interest rates must rise still higher than was necessary on our first assumption.

During the depression, when the production of fixed capital decreases, there is, at first, less capital on the market in search of investment than would be the case if there were a normal amount of saving. This modifies a little the rise in the prices of fixed capital and the fall in the bank-rate, but does not altogether eliminate them. In the later phase of the depression, when capital is again formed

more freely and an increase in the production of fixed capital has not yet begun, the position of the capital market is particularly favourable.

These movements are also influenced by the increased return on fixed capital which characterises the period of trade revival. This increased return is the result of both the more complete use to which we are able to put existing fixed capital at this period and the opening-up of new and very remunerative uses of capital, which is the starting point of the whole upward movement. At first, this increased return is probably greater than the rise in the price of fixed capital which we also found to be characteristic of the earlier part of the upward course of trade. This is why the rate of interest rises, though rather slowly, during this period. At the time of the trade boom proper, the large return on fixed capital combines with the factors already mentioned to raise the rate of interest yet higher. During the depression the unfavourable return on fixed capital helps to keep the rate of interest at a low level.

A study of the influence of trade cycles upon the capital market must take into account still another factor, namely, the attitude of the banks. At the very outset of a trade revival they generally continue to supply means of payment at the earlier rate of interest, or, at all events, hesitate to raise the rate as quickly as the growing scarcity of capital-disposal would require. Consequently, the capital goods are capitalised at too low a rate of interest, i.e. their prices are pushed upward. Hence the production of capital goods appears to be particularly profitable, and the entrepreneurs make free use of the purchasing power which the banks put at their disposal so cheaply. This leads to a diversion of the community's purchasing power in the direction of capital goods. There ensues a corresponding change in production, so that the consumers' demands cannot be fully met. Thus this action of the banks has the same effect upon the distribution of the community's total purchasing power between capital goods and consumers' goods as an increase in the savings of the community.

The newly created purchasing power which the banks put at the disposal of business men must naturally bring about a rise in prices,

and this must spread until it results in a rise in the general price-level. Trade then requires a corresponding increase in the supply of means of payment, and the banks satisfy this demand. During the period of trade revival both the quantity of bank-notes and the general price-level go up. During the depression, however, banks' advances are repaid to a great extent, the general provision of means of payment becomes more stringent, and the general price-level falls again.

The movements we have described – namely, the change in the relative scale of the formation of capital, the fluctuations in the amount of the savings of the community, the variations in the return on fixed capital, and the changes in the supply of bank-notes – collectively bring about fluctuations in the rate of interest and in the prices of capital goods. We see these phenomena occurring during the various phases of a trade cycle. We can show them statistically, as we shall endeavour to do in the subsequent sections.

### § 76 *The Rate of Interest*

It is a generally recognised fact that the rate of interest rises sharply at the peak of a trade boom. We made this fact the basis of our definition of the critical phases of trade cycles, the "turning years." Our diagrams in connection with the variations of the discount rate in Berlin and London (Figs. 7 and 8) show how pronounced this rise in the rate of interest is at the highest point of a trade cycle. After the crisis the rate of interest, as a rule, falls rapidly, usually much more rapidly than it rose. It is interesting to follow these movements month by month. In London, the market discount rate stood, on the average, at 2.66 per cent. in 1905, but rose in 1906 to an average of 4.05 per cent. In November, 1907, the maximum rate of 6.61 per cent. was reached. It then fell very rapidly in the following months, and in July, 1908, reached the minimum of 1.30 per cent. In November, it stood at 2.27 per cent. On the Berlin Bourse the maximum rate of 7.07 per cent. was reached in December, 1907. In July of the following year the rate dropped to 2.75 per cent., and in December it stood at 2.92 per

cent.<sup>1</sup> There is no doubt, therefore, that the capital market is rapidly and considerably eased by the reduction in the production of fixed capital during the depression, in spite of the simultaneous, but less important, reduction in the formation of capital.

During boom periods that have lasted for some considerable time we can see how the rate of interest remains at first very moderate, and does not alter much until the later years of the boom. In England the upward movement of the 'nineties began in 1896, when the output of pig-iron reached the figure of 8,799,000 tons, as against 8,456,000 tons at the height of the preceding boom (1889).<sup>2</sup> The average market discount rate was only 1.52 per cent. in 1896, and during the two following years it remained at the moderate level of 1.87 and 2.65 per cent. It rose to an average of only 3.29 per cent. in 1899, and in the turning year, 1900, it reached an average of 3.70 per cent. In Berlin the discount rate in 1897, when the German output of pig-iron had risen to 6,881,000 tons as against 4,658,000 in the turning year, 1890, stood only at an average of 3.09 per cent. In the following years, 1898-1900, the average rate rose to 3.55, 4.45, and 4.41 per cent. After the crisis of 1900 and the subsequent depression a substantial increase in the production of fixed capital occurred in 1903 and 1904, though the market discount, however, did not exceed the average of 3.14 per cent. (1904). In 1906 and 1907, when the boom entered upon its second phase and the production of fixed capital was still very considerable (the pig-iron output amounted to 12,875,000 tons in 1907 against 8,521,000 in 1900), the average discount rate rose to 4.04 and 5.12 per cent. Thus the first years of an upward movement of the trade cycle may enjoy a moderate rate of interest. It is only in the last years of the revival of trade, during the trade boom proper, that the rate reaches such a height that it points without doubt to an increasing shortage of capital. The fluctuations in the capital market, which theoretical consideration compel us to assume, are thus completely confirmed by the movements of the discount rate.

<sup>1</sup> Pohle, *Monatliche Übersichten*.

<sup>2</sup> These and the following figures are taken from the *Statistisches Jahrbuch für das Deutsche Reich*.

In order to make the connection between the rate of interest and the production of fixed capital quite clear, it is useful to compare the changes in the rate of interest with the output of pig-iron at identical periods. Let us first try to make this comparison for the whole world. As the standard of the rate of interest we use the average market discount rate in London, Paris, Berlin, and New York.<sup>1</sup> The changes in the output of pig-iron and in the rate of interest in the four trade booms coming after 1873 are shown in the following table:

| <i>Year.</i> | <i>Rate of Interest.</i> | <i>Pig-Iron Output.</i> |
|--------------|--------------------------|-------------------------|
| 1st Period { | 1873      6.3 max.       | 15.1 max.               |
|              | 1879      3.5 min.       | 14.4                    |
|              | 1880      3.8            | 18.6                    |
|              | 1882      4.5 max.       | 21.6                    |
|              | 1883      4.1            | 21.8 max.               |
| 2nd Period { | 1886      3.5 min.       | 22.8                    |
|              | 1887      3.8            | 27.9 max.               |
|              | 1890      4.5 max.       | 29.4                    |
| 3rd Period { | 1895      2.8 min.       | 41.3                    |
|              | 1900      4.3 max.       | 54.8                    |
| 4th Period { | 1905      3.0 min.       | 61.3 max.               |
|              | 1907      4.83 max.      |                         |

We see that the maximum outputs of pig-iron and the maximum rates of interest fall, as a rule, in the same years. Only in 1883 did the maximum outputs of pig-iron extend to another year, but the figure of the preceding year was not exceeded by much. On the other hand, the minimum outputs of pig-iron do not, as one would be inclined to expect, correspond to the minimum rates of interest. As may be seen from the table, it is not until the beginning of a new period of trade revival, reckoning this period from the year when the pig-iron output first exceeds its old maximum after a depression, that the rate of interest reaches its minimum. The revival of trade activity, defined in this way, begins for the first period in 1880, for the second period in 1887, for the third period in 1895, and for the fourth – if we take into account the maximum of 46.6 for 1903,

<sup>1</sup> Pohle, *Statistische Unterlagen* (MS.).

which is not given here – in 1905. We have found, in the case of the first two periods, that the minimum rate of interest falls in the year preceding the commencement of the upward phase of the trade cycle, but in the case of the latter two periods in the first year

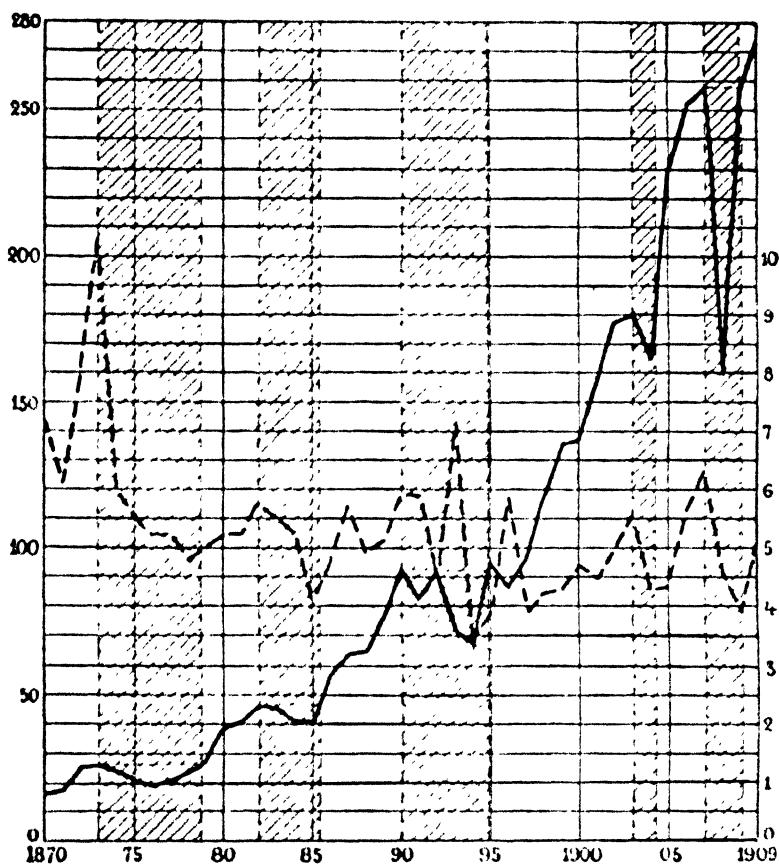


FIG. 18.—UNITED STATES.

PIG-IRON OUTPUT (IN 100,000 TONS, FIGURES ON THE LEFT) (———),  
AND MARKET DISCOUNT RATE (FIGURES ON THE RIGHT) (-----).

of the trade revival. These differences obviously depend upon the season of the year in which the changes take place, as well as upon other minor circumstances. We are therefore justified in drawing up the following general rule: The rate of interest passes from a fall

to a rise when the pig-iron output reaches its old maximum, and from a rise to a fall when it establishes a new record.

This rule, within certain limitations, is also valid for other countries. The case of the United States is demonstrated on our diagram (Fig. 18). The thick black line indicates the pig-iron output (in 100,000 gross tons, figures on the left), while the dotted line shows the market rate of discount in New York (figures in percentages on the right). The periods of depression are illustrated in accordance with our usual method (§ 69). We see that the minimum rate of interest always falls at the end of the period of depression. As a rule the rate of interest continues to decline during the whole period of depression.

This rule does not apply to the economic development of England in the 'eighties, as the pig-iron output decreased and was considerably smaller in the minimum year, 1889, than in the preceding maximum year, 1882. On the other hand, the rate of interest fell to its minimum in 1879, in the depression of the 'seventies, in the year before the beginning of a new revival. Similarly in 1895 the rate of interest fell to a minimum, and the new trade revival began in the following year. In 1905, when the pig-iron output in Great Britain exceeded its previous maximum after the depression at the beginning of the new century, the rate of interest was at its minimum.

In Germany the beginning of an upward movement, as we have defined it, coincides, as a rule, with the minimum market discount rate, except that in the 'eighties the rate did not reach its minimum until 1888, though the period of revival started as early as 1887. Regarding the maximum rates of interest and pig-iron outputs, one detects small discrepancies when separate countries are considered. Nevertheless, our rule should be regarded as adequately confirmed by experience. It appears to merit attention both on theoretical and on practical grounds.

### § 77 *The Changes in the Value of Stocks and Shares*

It is not an easy matter to give a general idea of the fluctuations of the prices of fixed capital, for there is no proper market for the

commodities in question. The greater part of fixed capital is, however, represented in paper values of one kind or another on the Stock Exchange. The demand for savings capital with which to purchase the fixed capital that has been produced is expressed partly as a demand for the means of buying shares, and partly as a demand for loans. The ownership of fixed capital is directly represented by shares, but the loans which reach the Stock Exchange in the form of bonds bearing a fixed interest also serve, from the economic point of view, as means for taking over the newly produced fixed capital. Loans are wanted not only by ordinary entrepreneurs, but also by public bodies. However, a substantial part of these public loans, particularly those of municipalities, is used for acquiring fixed capital. There are important differences between the movements of the prices of securities bearing fixed interest and those of ordinary shares, and these are based upon the fact that the value of shares does not depend merely upon the rate of interest, but also very materially upon the profits of undertakings.

The scarcity of capital which makes itself felt throughout the period of trade revival is bound of itself to reduce the value of all stocks and shares, particularly during the real trade boom, when the shortage of capital is generally very acute. But in the early part of the trade revival this tendency is counterbalanced, as regards shares, by the excellent profits that are earned on them. Hence, at first, shares increase in value, and the upward movement reaches its maximum at about the beginning of the boom proper. In consequence of the shortage of money on the capital market, the fixed interest bearing securities must, at the same time, fall a little in value. Though at first this decline may be very slow, these securities will probably pass their highest point while shares are still rising. It is clear that the value of the securities bearing fixed interest must be, to some extent, inversely proportional to the rate of interest. Their movements are, however, under normal conditions, somewhat slower than those of the rate of interest. When the rate of interest is low the Stock Exchange must always count upon a possible rise in the rate, and, consequently, upon a decrease in the value of securities bearing fixed interest, and thus it is only natural



that the latter should usually reach their highest value when the rate of interest has already passed its minimum – that is, somewhere about the beginning of an upward movement of trade. The maximum for the shares usually comes still later, as will be understood from what we have said.

During the trade boom proper, when the return on fixed capital already often shows a downward tendency, and the scarcity of capital is felt very acutely, shares are bound to be affected, and generally begin to decline in value. Hence the maximum value of the shares is to be found at a point somewhere near the beginning of the boom period. Even the securities bearing fixed interest will now, on account of the acute scarcity of capital, begin to decline rapidly in value, the culminating point being reached during the crisis itself. It would, therefore, be wrong to assume that it is the crisis which provokes the fall in values. The shortage of capital is in fact so acute for some time before the crisis that it is bound to lead to a considerable decline in values.

During the depression, when the rate of interest is low, the securities bearing fixed interest usually recover rapidly, moving steadily in an upward direction. In the case of shares, however, a poor return is generally the chief feature, and, though they recover a little after the crisis, it is not until the end of the depression that they begin to rise again.

From our knowledge of the condition of the capital market during various phases of the trade cycle we can deduce the following general rule regarding the movements in the value of stocks and shares: Both securities bearing fixed interest and ordinary shares touch their minimum at the time of the crisis; after this they both rise, but, in the case of the securities bearing fixed interest, only until the beginning of the next trade revival, when they both reach a maximum. The shares continue their upward course and attain their highest point at the onset of the trade boom. The downward movement starts at that point, soon extending to all classes of stocks and shares.

Now let us test these results.

That a fall in the value of stocks and shares occurs before the

crisis sets in – even to such an extent that we may speak of a crisis on the Stock Exchange as a forerunner of the economic crisis proper – is a fact generally known from the history of crises.

We will first consider the fluctuations in the quotations of shares on the Berlin Bourse in 1909. The index number of the *Frankfurter Zeitung*<sup>1</sup> stood on the last day of December, 1906, at 162.68, and on the last day of January, 1907, at 160.59, after which there was a sharp decline which reduced the index number by the last day of March to 152.61. Thus in the months of February and March eight points were lost. The next marked decline did not take place until October – the crisis month – when the index number fell from 149.10 to 143.90, or about five points. If we calculate from the maximum price of shares which stood in September, 1905, at the index number 175.60, we see that by far the greater part of the downward movement had ended before the crisis proper began. The crisis only brought down their value to a minimum of 142.91 (February, 1908).

We will now consider the movements of the 3½ per cent. Inconvertible Imperial Loan in Berlin, with a view to following the fluctuations of fixed interest bearing securities through a series of trade cycles.<sup>2</sup> The annual averages after 1889 were as follows:

| <i>Year.</i> | <i>Annual Average.</i> | <i>Year.</i> | <i>Annual Average.</i> |
|--------------|------------------------|--------------|------------------------|
| 1889         | 103.70 max.            | 1901         | 99.54                  |
| 1890         | 100.45                 | 1902         | 102.06                 |
| 1891         | 98.39 min.             | 1903         | 102.30 max.            |
| 1892         | 99.97                  | 1904         | 101.94                 |
| 1893         | 100.38                 | 1905         | 101.31                 |
| 1894         | 102.39                 | 1906         | 99.54                  |
| 1895         | 104.44                 | 1907         | 94.65                  |
| 1896         | 104.58 max.            | 1908         | 92.61 min.             |
| 1897         | 103.59                 | 1909         | 95.14 max.             |
| 1898         | 102.65                 | 1910         | 93.17                  |
| 1899         | 99.77                  | 1911         | 93.46                  |
| 1900         | 95.80 min.             | 1912         | 89.79                  |

The minima, as we can see, occur regularly in the crisis years, and the maxima in one of the earlier years of the trade revival.

<sup>1</sup> That index gives the average price of one half of the issues officially quoted on the Berlin Bourse (*Volkswirtschaftliche Chronik*).

<sup>2</sup> *Denkschriftenband zur Reichsfinanzreform*, Part IV.; Pöhle, *Monatliche Übersichten*.

It is very interesting to compare the course of the share quotations with these movements. The above-mentioned index number of the *Frankfurter Zeitung* enables us to make this comparison from the year 1904. From that date the exchange level of share quotations developed along the following lines<sup>1</sup>:

| <i>Year.</i> | <i>Index No. of Shares.</i> | <i>Year.</i> | <i>Index No. of Shares.</i> |
|--------------|-----------------------------|--------------|-----------------------------|
| 1904         | 153.92                      | 1909         | 156.96                      |
| 1905         | 168.82 max.                 | 1910         | 162.77 max.                 |
| 1906         | 163.25                      | 1911         | 162.45                      |
| 1907         | 149.29                      | 1912         | 158.78                      |
| 1908         | 145.32 min.                 | 1913         | 157.59                      |

It is remarkable that the share quotations do not reach their maximum until 1905, or at the beginning of the trade boom proper, and two years after the culminating date of the Imperial Loan. This occurs again in the upward phase of the next trade cycles. The Imperial Loan reached its highest point in 1909, but share quotations do not appear to have reached their maximum until February, 1911. This was just at the time of the beginning of the boom proper.

It is particularly interesting to study the movement of those shares which specially represent the production of fixed capital. According to *Volkswirtschaftliche Chronik*, the following annual averages may be given for the Berlin Bourse:

| <i>Shares.</i>                | 1904.  | 1905.  | 1906.  | 1907.  | 1908.  |
|-------------------------------|--------|--------|--------|--------|--------|
| Gelsenkirchen Bergwerk .. ..  | 219.18 | 230.21 | 224.84 | 198.50 | 189.33 |
| Harpener Bergwerk             | 205.45 | 215.47 | 214.34 | 203.89 | 198.07 |
| Bochumer Gussstahl            | 200.90 | 247.78 | 244.79 | 217.47 | 212.75 |
| Dorntmund Union               | 83.40  | 93.67  | 86.50  | 71.02  | 58.54  |
| Königs- und Laura-hütte .. .. | 243.37 | 261.72 | 243.86 | 225.51 | 207.09 |
| Berliner Maschinenbau .. ..   | 238.35 | 251.88 | 243.89 | 220.09 | 232.55 |
| Allgem. Elektr. Ges.          | 219.64 | 234.23 | 217.80 | 198.14 | 212.79 |
| Siemens und Halske            | 148.79 | 186.71 | 187.35 | 169.71 | 183.79 |

We see that, as a rule, these shares, too, touched their highest average point in 1905. In the case of the last share quoted, however, there is a slight exception to this.

<sup>1</sup> From the *Volkswirtschaftliche Chronik*, 1913, p. 1067.

### § 78 *The Scarcity of Capital during the Trade Boom*

During the last stage of a trade boom it is not only in the rise of the rate of interest and the fall in the value of stocks and shares that the tension of the capital market manifests itself. Every similar period presents us with an opportunity of directly observing a real dearth of capital. This scarcity makes itself felt in the growing difficulty which even very profitable concerns experience in raising funds.

These difficulties naturally react upon the production of fixed capital. Not every kind of production of this type, however, can be directly curtailed. The sphere in which a falling-off in production on account of the increasing stringency of capital may first be expected is clearly the building industry, in which the various contracts are completed relatively quickly, and in which, therefore, the contraction of production is easiest. The scarcity of capital makes itself felt in this industry in an increasing difficulty to sell completed houses, or to secure credits whereby to continue building operations. As building depends to a very great extent upon securing capital to assist these objects, and as builders can easily refrain from commencing new buildings, it should be regarded as a normal thing that the tension in the capital market causes building activity to slacken off even during the trade boom, and that, therefore, the maximum activity in this industry is attained some time before the end of the boom. This is confirmed by the American statistics of building which we have previously given (§ 63).

It is quite otherwise with the railways and similar large undertakings. The railways are not built for sale. The owners have, as a rule, a considerable command of capital, and can procure what is needed even in difficult circumstances. This is, of course, particularly true of State railways. Moreover, the construction of a new railway takes a much longer time than the building of an ordinary house. Again, a railway in course of construction must be completed even if the capital required should become slightly more expensive. It is, therefore, quite conceivable that in spite of the stringent condition of the capital market the work will be prolonged for a considerable time. What we have said about railway

construction also applies more or less to other enterprises, such as tramways, canals, electricity generating stations, etc.

Thus we see that the production of fixed capital and of the materials required for it maintains its upward movement for a time in spite of the difficulty of getting capital. In the later stages of the boom we must expect to find that the development of the building industry and its subsidiary industries will not be the same as that of the other kinds of production of fixed capital.

In Germany this difference became very clear in 1907. From the very beginning of the year the building trade was announced to be in a bad way, and the situation was ascribed to the dearth of money. The branches of the iron and steel industry which experienced a decline in comparison with the previous year were precisely those which supplied materials for the building trade. The output of the Stahlwerksverband of primary materials and moulded articles in 1907, as compared with that of the previous year, showed only a slight decrease, whereas the output of railway materials rose considerably. The difference is clearly seen in the following figures (in thousands of tons)<sup>1</sup>:

| <i>Products.</i>          |         | 1905. | 1906. | 1907. |
|---------------------------|---------|-------|-------|-------|
| Primary materials .. .. . | .. .. . | 1,911 | 1,862 | 1,558 |
| Moulded articles .. .. .  | .. .. . | 1,673 | 1,936 | 1,699 |
| Railway materials .. .. . | .. .. . | 1,631 | 1,936 | 2,327 |
| <i>Total:</i>             |         | 5,215 | 5,734 | 5,574 |

The greatest difference in development took place in the last months of 1907, when the output of primary materials, and especially of moulded articles, fell very considerably, whilst the output of railway materials continued to increase.

Owing to the difficulty of raising capital during the height of a boom, the big transport undertakings are often compelled to reduce their demand for capital. The management must then limit itself to what is indispensable with regard to the improvement and enlargement of the equipment and to the construction of rolling stock. This is still more necessary in the case of the smaller concerns. But as the means of transport are, as we saw, used to a very great

<sup>1</sup> *Volkswirtschaftliche Chronik*, 1907, pp. 695 and 772.

extent throughout the whole of the boom period, the larger undertakings will make certain sacrifices in this effort to get the necessary capital for their requirements. This is, of course, easiest in the case of States, which are on this account least disposed to reduce their demands for capital.

A consideration of the case of the United States enables us to see how great are the difficulties of raising capital during a trade boom. In 1907, the American railway companies were forced to limit themselves, to a great extent, to short-term loans instead of a regular issue of debentures. That part of the funded debt of the railways which is given in the statistics as "Miscellaneous Obligations" rose from \$974,000,000 in 1906, to \$1,616,000,000 in 1907, and \$2,181,000,000 in 1908, though in the latter year the range of the statistics was curtailed. At the same time the bonded debt rose from \$6,267,000,000 to \$6,472,000,000 and \$6,610,000,000.<sup>1</sup> These figures show an enormous demand for capital, as well as the great difficulty in getting it. In the following year, 1909, the amount of "Miscellaneous Obligations" rose by only \$86,000,000, while the bonded debt increased by \$332,000,000. These figures clearly illustrate a profound disturbance of the capital market.

The American statistics also give the amount which the railways have to pay annually as interest on their floating (unfunded) debts.<sup>2</sup> This charge amounted, in millions of dollars, to:

| <i>Year.</i> | <i>Interest Charges.</i> | <i>Year.</i> | <i>Interest Charges.</i> |
|--------------|--------------------------|--------------|--------------------------|
| 1890         | 8.1                      | 1901         | 5.5                      |
| 1891         | 8.2                      | 1902         | 7.7                      |
| 1892         | 7.9                      | 1903         | 9.1                      |
| 1893         | 8.0                      | 1904         | 13.9                     |
| 1894         | 10.2                     | 1905         | 11.5                     |
| 1895         | 7.9                      | 1906         | 11.7                     |
| 1896         | 8.5                      | 1907         | 16.7                     |
| 1897         | 7.8                      | 1908         | 31.3                     |
| 1898         | 7.1                      | 1909         | 24.2                     |
| 1899         | 7.1                      | 1910         | 16.5                     |
| 1900         | 4.9                      |              |                          |

<sup>1</sup> *Statistical Abstract of the United States*. It must be remembered that the years quoted end on June 30th.

<sup>2</sup> *Ibid.* Here again the years end on June 30th.

We see how considerably the interest on the unfunded debts rises in years of crisis. Even in the preceding year there is an appreciable rise. This demonstrates that the railway companies, during the last phases of the boom, were unable to raise regular loans to a sufficient amount. This again confirms the very important fact that during a trade boom there is a scarcity of capital.

From the foregoing it follows that the diminution in savings during the last part of a trade boom makes itself felt first in a limitation of the kind of industrial activity in which the separate undertaking, as in the building industry, is completed comparatively quickly, and then in an increasing difficulty which large transport concerns experience in raising capital, until at last, in the case of private companies at least, this can only be done at the cost of substantial sacrifices. Governments and municipal bodies are least affected in the production of fixed capital by the increasing stringency in the capital market.

## CHAPTER XIX

### THE DETERMINING FACTORS OF TRADE CYCLES

#### § 79 *The Principle of Action and Reaction*

IN our studies of trade cycles, we have so far confined ourselves to the actual processes and their immediately connected problems. Now let us look more closely at those factors which, acting as driving or restricting forces, determine the movements of the trade cycle.

Of these forces, interest on capital occupies the central place. The low rate of interest which prevails during the depression obviously leads to a greatly increased production of fixed capital. Given a certain return, the lower the rate of interest, the higher is the value of fixed capital. Hence the low rate of interest is equivalent to high prices for the capital already produced. At a time, therefore, when a low rate of interest has been maintained for a long period, prospects of considerable profits await those entrepreneurs who are prepared to undertake building contracts, railway construction, or other works which require a large amount of fixed capital. The profits can be realised by selling the houses or the shares of the undertakings to the public in search of investments.

We have already seen (Chapter VI.) that there are always potential undertakings which require a good deal of fixed capital, and which are, therefore, not remunerative when the rate of interest is high. Directly the rate falls, however, a certain proportion of these undertakings become remunerative. It will then not be long before the possibilities begin to be translated into realities. If, for example, a railway from which we estimate a net annual revenue of £400,000 requires an outlay of £10,000,000, it cannot be constructed as long as the rate of interest is 5 per cent. But if the rate falls to 3 per cent., the construction becomes profitable and will, in all probability, be carried out. Thus the rate of interest is, to a



great extent, the decisive factor as regards the economic possibility of providing permanent productive equipment. But, as we know, it has nothing like the same importance in connection with the current production of consumption goods. A low rate of interest which is maintained for some time ought, therefore, to accelerate the production of fixed capital much more than any other kind of production, and so bring about gradually that adjustment in social production which, favourable to the production of fixed capital, we described as an essential characteristic of the trade boom.

A high rate of interest, on the other hand, must reduce the value of fixed capital and cause loss to entrepreneurs who are engaged in producing this type of capital. Many undertakings can hardly be completed as long as the rate is high. The economic possibilities of an increased production of fixed capital are greatly restricted by a high rate. Only undertakings that promise an exceptionally high profit can be considered. But if they prove less remunerative than was anticipated, and unable to bear the high interest demand for the disposal of capital, this must have a depressing effect upon any new projects for the production of fixed capital.

This explains why a prolonged high rate of interest leads to a fall in the production of fixed capital. The production of consumption goods, however, does not suffer to anything like the same extent from a high rate of interest. When it too declines a little, together with the production of fixed capital, this must not be regarded as a direct consequence of the high rate of interest during a trade boom, but rather as a secondary phenomenon. However, the direct effect of the high rate of interest on the production of fixed capital is enough to convert the trade boom into a depression.

Thus the rate of interest has a very definite effect on the course of the trade cycle, an effect that is always in the opposite direction to that course. During the depression there is a low rate of interest which has a restorative effect upon enterprise: during the boom there is a high rate of interest which acts as a brake. On the other hand, the rate of interest is itself affected by the trade cycles. The depression brings down the rate of interest, which in turn leads to the end of the slump. A parallel to this is the rise of the rate during

a boom to a level which cannot be maintained for long, and the boom itself is bound to come to an end. There is thus a reciprocal action between the rate of interest and the progress of the trade cycle.

This reciprocal action is only an instance of the general principle of action and reaction. If there is to be any stability at all, all action, in the economic as well as the physical world, must provoke a reaction. The fluctuations in the rate of interest, however, are not the only reactions that serve to check the trade cycles. Among other factors which restrict the boom there is, in the first place, the rise in the prices of the materials of fixed capital, which, as we have seen, may be very considerable, and must naturally greatly hamper the further production of such capital. A second factor modifying the boom is the rise in wages. Both these influences tend to make the production of fixed capital dearer; houses, railways, factories, etc., will cost a good deal more to build than was allowed for in the plans. This phenomenon, which takes place almost without exception during the boom, has naturally a very disturbing effect upon the chances of profit, even upon the enterprise of many firms, and clearly gives little encouragement to further enterprise. Even if there is a fall in the value of the fixed capital already produced, on account of a high rate of interest, we quite understand how the rise in wages and prices, together with the rising rate of interest, must act as a powerful brake upon the trade boom. It is not at all surprising that these restricting factors put an end to the abnormally large production of fixed capital, and consequently to the whole trade boom.

It might rather have been asked how it is possible that in the boom period proper, when the prices of fixed capital have begun to decline, the high prices of the materials and labour required to produce the fixed capital can be maintained for some time. This may be explained by the fact that the equipment, buildings, etc., in question promise for the most part an exceptionally high profit, and, therefore, leave a certain margin for the increase in cost; again the undertakings in question, when once begun, must be completed even at a sacrifice.

The depression also creates corresponding forces which tend to counteract it: there are then low prices for materials of fixed capital and low wages. These factors cheapen the production of fixed capital, at the same time as the low rate of interest, itself a result of the depression, raises the value of the completed capital goods. The co-operation of these forces overcomes the depression and leads to an upward movement in trade.

The rate of interest has, of course, a certain importance in connection with production itself, just as have the prices of materials. But we may leave this element out of consideration in order to bring out more clearly the essential effect of changes in the rate of interest.

The fluctuations of trade cycles are, in general, somewhat accentuated by the action of the banks which we mentioned previously. If the banks keep the rate too low at the beginning of an upward movement in trade, this acts as a special encouragement to the production of capital, and helps to intensify the boom. The rise in the general price-level which is caused by the unduly low rate of interest ought to act at first in the same direction.

### § 80 *Further Explanation of Trade Cycles*

From what we have said, cyclical fluctuations of trade must be regarded as a result of the reciprocal action of the enterprise of business men and the great regulative factors of the social economy which have their roots in economic scarcity – the prices of materials, wages, and the rate of interest. After this explanation, there still remain a few questions that require further elucidation.

In the first place it might be asked: Does not the reaction produced by the various restricting forces make itself felt at once, so that any increase or decrease in the production of fixed capital is prevented from the start? It might be supposed that in this way we could gradually bring about, at least for the most part, a state of constant equilibrium.

But we must bear in mind that the reactions in question always

take some time to make themselves felt. The decrease in the production of fixed capital that characterises the depression generally continues, as we saw, for some time before its effect on the rate of interest is fully felt. The rate of interest in turn must remain low for a time in order to restore and strengthen the confidence of entrepreneurs in the capital market. Moreover, the entrepreneurs, too, need some time to prepare new plans, adapted to the changed conditions, and to get to work on them. As long as the production of fixed capital remains below its previous maximum, the rate of interest continues to fall, giving an increasing incentive both to the public with money to invest and to entrepreneurs to enter upon new ventures. As soon as the reaction induced by the low rate of interest sets in, and the production of fixed capital consequently begins to rise above its last maximum, the rate of interest changes its direction, but still remains for a time too low to be able to check the beginning of an upward swing in trade. Our studies have also shown that the rate of interest does in fact reach its minimum at the end of the depression, that it rises slowly in the period of trade revival, and that it rises rapidly only during the trade boom proper.

The length of the trade cycle is also connected with the fact that the production of fixed capital requires time. The undertakings which are planned during the depression or at the beginning of the revival generally require several years for their completion. Comparatively little time is necessary for erecting houses. One or two years generally suffice. Railways, canals, water-power stations, etc., require a much longer time. Hence a brisk activity in this sphere cannot be checked at once by the restrictive forces. Thus the length of the trade cycle is to some extent connected with the length of the period of production of the undertakings in question. It is, therefore, not altogether improbable that the general tendency, so characteristic of our day, to shorten the time required for building and other constructions has also helped to shorten the periods of trade cycles, a phenomenon that seems to have manifested itself in the twentieth century.

Add to this the fact that the increased production of fixed

capital requires on its own side enlargement of all plant and means of transport needed for this production. Even the production of goods ready for consumption, which has its share in the trade boom, though in a slighter and secondary degree, will need new machinery and larger plant. This expansion of the trade boom naturally takes some time. The profits that are made on account of the high prices of products prevailing at the beginning of a trade boom lead to the establishment of new undertakings or enlargements of existing businesses based on the expectation that the high prices will continue. The prolongation of the trade boom depends largely upon the expectations inspired by the first and really profitable part of the trade revival, which, however, cannot be realised during the later part of the boom on account of the counteracting forces, the latter being constantly ignored or under-estimated by the public. But these forces become the more impelling the more they are overlooked. They may succeed in exercising a restraining influence at the right time in some spheres, such as building. Generally, however, there has to be a more or less violent crisis before the public learns not to lose sight of the laws of economic limitation.

In the second place it might be asked: If it is quite clear that the trade cycle must spread itself over a number of years, why is there not at least a gradual levelling-out of the upward and downward movements as a result of the reactionary influences? To this we can reply: This would undoubtedly be the case but for the events taking place from time to time which cause a renewal of the whole trade cycle.

Technical progress is one of these events. We have already seen that modern technical progress has mainly expressed itself in an increased use of fixed capital. The best instance of this is the railways. In the nineteenth century railway construction was always the form of activity that mainly characterised the trade boom. But in the last boom of that century, as well as in the first of the present one, this leading position passed, at least in part, to another sphere of enterprise, namely, the electrical industry. In the middle of the 'nineties, when the rate of interest was, perhaps, lower than ever, the widespread application of various electric inventions was

apparently the immediate cause of the enormous demands on fixed capital, which led to a new boom and thus started once more the fluctuations of a trade cycle. The construction of electric tramways, electric lighting installations, large power stations, telephones, and so on, necessitated a vast production of fixed capital. In the present century all these improvements have become the objects of a keen demand. No country, no district, no town, could be satisfied without making some use of these new achievements in the application of electricity. The communities were not intimidated by the possibility of a shortage of capital until it was impressed upon them by an exceptionally high rate of interest, or even the impossibility of getting capital at all. In this competition, State and municipal authorities have been at least as keen, and as regardless of the state of the capital market, as private individuals.

Under such circumstances a trade cycle that is already much attenuated is bound to be restored to full strength by some new technical advance, and will then continue in the form of a fluctuation for some time.

Among other events having the same effect we must include particularly the exploitation of new countries. When an uncivilised or semi-civilised country is opened up to civilisation, there is immediately a considerable new demand for means of transport, bridges, hydraulic works, lighting installations, and, above all, houses for a rapidly growing population – in a word, for fixed capital. The pronounced booms since the middle of the 'nineties have clearly been due to a great extent to the diffusion of Western civilisation. The economic exploitation of the whole of the Far East, particularly China, is bound to give rise once more to new large demands for fixed capital and will in all probability lead to fresh trade booms. But, naturally, the stimulation of trade which originates in the exploitation of new countries will tend to disappear altogether when the world is more or less uniformly equipped with the material foundations of Western civilisation.

Every new opportunity to use fixed capital profitably on a large scale acts as a stimulus to trade. Society, as we have repeatedly pointed out, always has a large number of such opportunities, but

they can only be used to a limited extent on account of the rate of interest. If this number is increased by more such opportunities to use fixed capital which remain profitable even when the rate of interest is high, there will inevitably be an extraordinary increase in its production, or a new trade boom. Anyone who complains of trade cycles, and condemns a social order that facilitates or tolerates their existence, is really complaining of the advance of our material civilisation. Here again we notice how the critics of our social order conveniently overlook progress and all the difficulties it entails for the community by means of a facile abstraction, so simplifying the matter for themselves. But in so doing they make it impossible for themselves to understand the true facts.

Progress cannot be absolutely uniform. Every development, intellectual or material, has its specially active periods and its reactions. As far as material production is concerned, we have particularly to bear in mind that every unevenness in production for current consumption is always bound to lead to much greater unevenness in the employment of the durable means of production of a higher order. As these represent fixed capital, and as the trade cycles are, in essence, merely fluctuations in the production of fixed capital, we can hardly conceive a complete elimination of trade cycles in a progressive economic system. In proportion, however, as progress is retarded or made more uniform, we may expect a certain modification in the amplitude of the trade cycle. In accordance with this observation, it is only natural that at the time of the great industrial revolution, when society took the decisive step from the old to the new economic order, there had to be a series of pronounced booms and subsequent depressions.

When we speak of progress in the economic sense, we must always include in this term the growth in population. Every increase in population necessitates a corresponding increase in the fixed capital of the community. An increase of fixed capital above the average must clearly afford more room for the play of trade cycles. On the other hand, a generally weaker increase of fixed capital is bound to some extent to have a restrictive effect on trade cycles. A community with a constant population might succeed in keeping

the trade cycles within narrow limits. We might even discover the existence of such a correlation between the growth of population and trade cycles by comparing different countries. It is at once noticeable how much more important Germany and the United States, with their huge growth of population, are in connection with world-wide trade cycles, and how much more they are affected by them than a country like France, with a relatively stationary population.

Thus we come to the conclusion that the future of trade cycles depends essentially upon the future of material progress, viewed qualitatively as well as quantitatively.

In this connection what place ought we to assign to speculation, which is very generally held to be an essential factor in trade cycles? Naturally, we ought not to overlook the part which speculation plays in a trade boom. The exaggerated ideas and hopes of the public concerning the economic possibilities are powerful impelling forces in every boom. But, at bottom, speculation, apart from its excesses, is only an expression of the zeal of entrepreneurs to obtain a profit by meeting the increased demand of the community for fixed capital. As this demand has its roots in the desire of the community to utilise technical discoveries or new lands – the determination of the nation to grow: in a word, the national will to progress – we may say that speculation is only a reflection of the general will to progress in the economic field. The fluctuations of trade cycles are a result of the struggle of this will to progress against the economic scarcity that it encounters in all points. Under modern conditions, speculation has its place in this struggle, but does not represent an essential feature of it.

Such being the case, the trade cycle is not bound up with a social order based upon private enterprise. As long as there is a will to progress, and as long as the physical satisfaction of this will requires the use of a large amount of fixed capital, we must expect the same kind of fluctuations in the productive work of the community that occur in the modern trade cycle.

Socialists believe that the socialisation of the means of production, in putting an end to private enterprise, will also put a stop to



trade cycles. This contention appears to be based on a very inadequate analysis of the trade cycle. The possibility of diverting social production too much in the direction of an increased production of fixed capital is present in every social order. If these changes are, in the long run, due to a will to progress and a desire to profit without delay from new possibilities, they will hardly be more successfully avoided in a socialistic community than in a capitalistic system of private enterprise. All experience up to the present has shown that it is particularly difficult under a democratic régime to resist the demand made upon the State and the municipality. Public bodies already have very wide productive functions, and these require a great deal of fixed capital. As producers they have scarcely helped to lessen cyclical fluctuations of trade. Indeed, their increasing demands have only made the boom periods more acute. Thus a further transfer of fixed capital into the hands of the State and the municipality is hardly, in itself, a means of mitigating the trade cycles.

Another question which we cannot answer here is whether public enterprise, through a more far-sighted policy, based on a thorough knowledge of the nature of trade cycles, could not bring about a certain modification of trade cycles. It remains to see what will come of the various experiments made recently in this direction. But in most countries the conditions for such a policy are entirely wanting.<sup>1</sup>

### § 81 *Crises*

Why cannot the trade boom, when the conditions for its continuance no longer exist, pass gradually into the depression, much as it itself gradually developed out of the depression? Experience shows that this is not the case; that the boom collapses suddenly, and often ends in a catastrophe. This catastrophe, which we call an economic crisis, is characterised chiefly by a general inability to

<sup>1</sup> The present Five Year Plan of the Soviet Republic is a most gigantic example of an increased construction of fixed capital under the leadership of a socialist Government, eager to attain the highest possible progress within a short time. Such exaggerated sacrifices for progress are unthinkable in a society founded on private enterprise. This experience is a good confirmation of the views of the text formulated before the war.

meet existing liabilities. Its well-known symptoms are great losses, compulsory sales, an abnormal increase in the number and extent of bankruptcies, and a general lack of confidence.

Such a situation shows that the business world must have gone astray on some point; it must have made some calculations that have proved unsound. What is this point?

According to a very widely accepted view, the crisis must be regarded as a result of over-production. It would therefore be due to a miscalculation of the demand, an over-estimate of the real needs of the community. We cannot deny that wrong calculations and over-estimates of this sort do commonly play a part in every boom, and intensify the crisis. This was particularly the case with the older forms of crises. But in modern crises it is not primarily a question of over-production in this sense. As the boom is distinguished by an extraordinarily increased production of fixed capital, it would appear that we should look to this sphere in particular for the over-production. But, as we have already seen, it seems that the services of fixed capital, which are the object of the demand of the consumers, are generally not at all in excess even in the last part of a boom; that, on the contrary, the fixed capital has to be used to the utmost to meet the demand. Even the materials of fixed capital are not produced to excess during the trade boom. Indeed, the boom commonly shows an unmistakable scarcity of these materials – a scarcity which becomes particularly apparent through the extraordinarily high prices of these commodities. We must, therefore, entirely reject the theory that the crises are caused in the main by an over-production of the materials of fixed capital.

Hence it seems that no link is missing in the chain that normally connects the producers with the consumers. Why, then, in spite of this, does the chain break? The answer is: *The typical modern trade boom does not mean over-production or an over-estimate of the demands of the consumers or the needs of the community for the services of fixed capital, but an over-estimate of the supply of capital, or of the amount of savings available for taking over the real capital produced.* What is really over-estimated is the capacity of the public to provide savings in sufficient quantity. We must bear in mind that this

capacity has to be estimated many years in advance, since, on the average, there are several years between the time when the work is planned and the time it makes its full demand upon the community's savings. The individual entrepreneur has no other means of judging the condition of the capital market except the rate of interest. The rate, however, is low, or at least moderate, during the depression and the first part of the trade boom, since the demands for capital-disposal which result from the increased activity of entrepreneurs in the production of fixed capital, do not yet make themselves fully felt. It is therefore quite possible that undertakings, such as the building of houses, railways, etc., will be planned, and even begun, in such numbers that, when their need of capital makes itself fully felt, it cannot be satisfied.

If the boom is pressed continually onward in this way, there must, at last, come a time when it is clear that the market cannot find a sufficient quantity of savings with which to purchase the real capital produced. There must then be a sudden fall in the value of fixed capital, and entrepreneurs must find it extraordinarily difficult to get the capital they need, either by loan or selling securities. They undoubtedly have not counted upon such an event while incurring their various liabilities in the course of their productive work. When it becomes clear that they have been mistaken in this respect, there is bound to follow a widespread inability to meet the liabilities incurred. This situation gradually becomes worse, since the whole business world depends to a great extent upon the punctual discharge of obligations that fall due. There is bound to be a general economic crisis.

Clearly, this wrong estimate of the future condition of the capital market would not lead to such a catastrophe if the individual entrepreneur secured in advance the whole of the capital he needs to carry out his plans. But this can rarely be done. The capital subscribed by shareholders for commencing a large undertaking generally represents only a part, sometimes only a very small part, of the whole of the capital needed. As to the remainder, business men usually reckon upon procuring it in the future by the issue of debentures, by bank credits, etc. Moreover, the capital is, as a rule,

not paid up by the shareholders all at once. The payments are often deferred for long periods. Here again, therefore, calculations are based upon the capital market of the future. In addition, shareholders usually go beyond their own means and need capital, which they have to get by means of loans, often only of short duration. It is clear that subscriptions of this sort do not, from the economic point of view, represent a real actual command of capital on the part of the entrepreneur. But, even in the case where a business has secured capital in advance, this capital will be temporarily invested at interest until it is used in the business, and will be placed at the disposal of the community through the banks or in some other way. It will, in that case, be used in other undertakings, and, from the economic point of view, will be no longer available for the construction in question. In these complex circumstances we can easily understand why the demands made by existing business undertakings upon the capital market of the future cannot be satisfied in their entirety, and why the possibilities of this future market of meeting the demands are over-estimated. An entrepreneur whose aim is to put his business on a sound basis can, if he so wishes, possibly secure the whole of his capital from the start. If the primary cause of crises is a wrong estimate of the possibilities of obtaining, on the capital market of the future, the funds necessary for completing an enterprise that has been begun, the best means of avoiding the danger of a crisis is in such a policy. Obviously, however, it can only be done in practice to a limited extent. Calculating in advance the future capital requirements of an undertaking is a difficult proposition, because the rise in prices and wages that accompanies a trade boom often adds considerably to the costs of the business, so that the future requirements of capital, both of the individual concern and the entire business world, will be greater than was estimated. To avoid unpleasant surprises of this kind it would be necessary to take into consideration the imminent rise in prices at the commencement of a boom.

The question of the provision of capital during a boom cannot, therefore, be examined entirely from the angle of private enterprise. From the general economic point of view there can be no such

thing as a securing of capital in advance; the capital that is used to-day must always be taken from the social income of to-day. In actual practice, therefore, the only course left open to us is to attempt to make a correct estimate of the whole of the demands for capital which arise at the same time during the boom; and it is not an easy matter to make such an estimate.

That the crisis really consists in an acute shortage of capital – that is, savings needed for purchasing the real capital produced – is partly shown by the great difficulty of selling the fixed capital already produced or obtaining the means to cover the costs of its production, and partly by the very general inability to complete undertakings that have been begun. In either case, the lack of capital must mean heavy losses. They are bound to be particularly severe when constructions already begun cannot be completed, and must suffer damage or even be entirely destroyed and abandoned. Examples of both effects of the lack of capital may be witnessed during every severe crisis.

The increasing scarcity of capital during a boom is hidden in a confusing way from the business world by the usual large increase of bank means of payment at such a time, which are naturally regarded by the business man as capital. Later on, when the banks find it necessary in their own interest to cut down this excessive supply of means of payment, the real scarcity of capital is felt suddenly and acutely. It is obvious that this may precipitate and greatly aggravate the crisis.

**BOOK V**  
**INTERNATIONAL TRADE**



## CHAPTER XX

### THEORY OF INTERNATIONAL TRADE

#### § 82 *International Trade as a Problem of Currency*

By international trade we mean trade between two or more regions which regard themselves as independent economic units. Such a view is expressed by the idea of a certain economic community of interests within the regions, and this idea is able to make itself felt to such an extent that it causes a conscious representation in one form or another of these common interests. If it is sought externally to influence this consciousness of common trading interests in any way whatsoever, there arises an international commercial policy. The most effective means for carrying out a commercial policy is a definite tariff boundary, and, according to modern conceptions, the territory which is bounded by a tariff barrier is the essential commercial-political unit. According to this concept, international trade is trade between different tariff areas. It is clear, however, that such a definition lays undue weight upon a technical factor. Tariffs are by no means a necessary condition for the existence of international trade. Indeed, for purposes of theoretical study, it is the most natural course to assume at first that no such artificial obstacles are placed in the way of international trade. The characteristic feature of international trade must therefore be sought in the essential nature of the economic independence of the areas in question.

Now the theory of international trade, like every economic theory, must be primarily a theory of the fixing of prices. As soon as we wish to study the price-structure in two different countries as influenced by the trade passing between them, we must postulate a monetary system for each country. The most general assumption is that these monetary systems are independent of each other. We may, therefore, base our reasoning on the fact that the economic independence of every country is shown primarily by an independent



currency. We may think of this currency as a free paper currency autonomously controlled by a suitable regulation of the supply of means of payment. International trade is, then, to be regarded essentially as trade between two countries with independent currencies. By means of this definition we are able to strike at the roots of the new phenomena which we have to analyse if we wish to extend the study of price-structures beyond the limits of a unified territory. Thus it appears that this view of the basic principles underlying international trade is very suitable for a representation of the theory of international trade, and we shall select this definition as the starting point of the study that follows.

Countries on a gold standard have, to a certain extent, a common basis for their currencies. From the point of view of the principles of this book, such currencies are to be regarded purely as independent paper currencies which are consciously regulated so that they are maintained at an approximate parity with gold, and thereby with other gold standard currencies. This case is, therefore, to be treated as a special case of our general assumptions, a special case which is distinguished by the fact that a definite aim is set for the regulation of the currency.

It sometimes happens that independent countries have a so-called common currency. This was the case, for example, in the Scandinavian countries before the war, as well as in the countries of the Latin Monetary Union. In reality, such countries have each an independent currency. Each country is responsible for the maintenance of its currency at the given parity, and must pursue a monetary policy specially to this end. Even when uniformity in the sphere of monetary systems goes so far that the various currencies of the Union are always bought and sold at par, as in the former Scandinavian Currency Union, on the basis of an agreement between the central banks, the characteristics of an independent currency remain. The various German States are not independent entities in the sense understood above, for actually they have a common currency which is governed by a single organisation – the Reichsbank. The United States of America has, it is true, a uniform currency. For a long time, however, it was quite a problem to

maintain the dollar currencies of the various States at a parity with one another. Since the creation of the Federal Reserve System this problem has been gradually solved. For, as this system is under the supreme direction of the Federal Reserve Board, there is a common currency within the Union, although the twelve different Federal Reserve Banks are so far independent that each one has a monetary policy more or less of its own, with its own discount rates to maintain the parity of the dollar. It would certainly be very interesting to study the trade between the various Federal Reserve districts and its significance on the maintenance of the dollar parity; such a study would throw much light on the closely related problem of international trade. In what follows, a region having an independent currency will be termed simply a "country."

Let us now consider the simple case where there are only two countries, *A* and *B*, trading with each other, and where the trade between them is exclusively in commodities; further, let us assume that the rate of exchange between the two countries is expressed as the price of *B* currency in terms of *A* currency. If this rate of exchange is high enough, then all commodities of country *B* will be too dear for country *A*, and a commodity import from *B* into *A* cannot take place at all. On the other hand, the commodities of country *A* will be very cheap in country *B*, and, if the rate of exchange is sufficiently high, people in *B* will import all their commodities from country *A*, instead of producing them themselves.

If the rate of exchange is high, without, however, reaching the level that prohibits the import of commodities from *B* into *A*, it must nevertheless greatly restrict these imports, and at the same time encourage exports from *A*. The result is, then, that *A* constantly has a substantial surplus arising from its trade with *B*. Conversely, a very low rate of exchange must result in a constant deficit in *A*'s balance of trade. Clearly, there must be a position between these two extremes where *A* will buy from *B* exactly as much as it sells to *B*, and where the balance of trade will be in equilibrium. We assume that all commodities are immediately paid for; in other words, that the one country extends no credit to the other, at least not for a period longer than is technically

necessary for adjusting the mutual payments. This position, then, represents the equilibrium position for the rate of exchange, for in any other position a constant scarcity of foreign currency would be felt in one of the countries, and the price of this foreign currency would of necessity rise. Only a rate of exchange at which the balance of trade is in equilibrium can possess a permanent stability. This rate of exchange is termed the *purchasing power parity* (cf. § 59).

From these simple considerations we reach at once an important conclusion. A country, in its trade with another country, can never have an all-round superiority, and can never be so inferior in competition that it can sell no products at all to the other country. There is no such thing as an absolute superiority in the sense that one country produces more cheaply than the other. Such a comparison can only be made at a definite rate of exchange. Let the one country be inferior to the other in technique and organisation, let it be worse equipped with capital, land, and skilled labour; nevertheless, there exists a rate of exchange at which it can sell as many commodities to the richer country as it buys from it, and thus equilibrium will come about in its trade with that country. There are always branches of production which are relatively more favourable for the poorer country, and in these branches the country will necessarily be able to export at a suitable rate of exchange. Costs of production are a conception that refer to the internal price-system of a country, and a comparison of the costs of production of two countries is only possible at a definite rate of exchange. The rate of exchange must so be fixed that advantages and disadvantages in respect to costs of production are so compensated that the balance of trade is brought into equilibrium.

This line of reasoning not only sets out the classical theory of "comparative costs" in its most simple and, at the same time, most general form, but also clears the ground for answering a series of questions which generally have a prominent place in discussions of commercial policy. The widespread impression that an undeveloped country needs tariff protection to allow it to compete with an economically advanced country, now appears as a misconception of the elementary conditions of international trade. The same applies

to the idea that a rich country which has high costs of production as the result of a high standard of living must be inferior in competitive power to countries with a lower standard of living. We shall return later to these practical questions.

It is necessary in the first place to define more closely the significance of the term "purchasing power parity." A direct comparison between the purchasing power of money in two different countries is not possible in an exact sense. If, however, we are content with a rough and ready estimate, there is no difficulty in seeing that the purchasing power of money is distinctly higher in one country than in another. If everything in France is nominally – that is, reckoned in the currency unit of the country – about one hundred and twenty-four times as dear as in England, then it is obvious that the public will find that the French currency is only a hundred and twenty-fourth part as valuable as the English; in other words, a pound sterling will be ranked equal to one hundred and twenty-four francs. The natural rate of exchange for the pound sterling, measured in French francs, thus lies in the neighbourhood of 124. At this rate of exchange the purchasing power of money in the two countries is approximately the same, so that for a certain sum of money one obtains just as much, whether it be changed into French or English currency. In this rough sense we can say that the rate of exchange results in a parity of the purchasing power of money in the two countries, and so the term "purchasing power parity" is justified. It is obvious that this purchasing power parity must be the fundamental factor determining the rate of exchange. A direct comparison of the purchasing power of money in the two countries does not enable us to calculate exactly the rate of exchange, but it does bring out clearly why the pound sterling cannot be equal to *one* franc, but must be in the neighbourhood of *a hundred and twenty-four francs*. If the English were to reckon in shillings instead of pounds, the rate of exchange would be reduced to a twentieth of its former equilibrium level, because the English currency unit would have only a twentieth of its former purchasing power.

The rate of exchange must therefore fix itself in such wise that

when one currency is changed into another a certain sum represents approximately the same purchasing power. The idea that a sum of money has a much greater purchasing power in one country than in another, the exchanges remaining at their equilibrium level, is in most cases an erroneous conclusion drawn from cursory observations. If, for example, tourists observe that living in a rich country is much dearer than in another country, and from this form the hasty conclusion that the purchasing power of money in the former country is distinctly less than in the latter, this conclusion is based substantially on the fact that the travelling expenses of tourists are dependent to a great degree on the price of personal services, and must therefore be particularly high in a country with high wages. If one believes that a large and representative quantity of commodities is dearer in one country than in another, one must always inquire whether there are also some important commodities or services which are cheaper. For if this were not the case it would be impossible to explain why equilibrium in international trade should come about at the prevailing rate of exchange.

On the other hand, as already emphasised, an exact comparison between the purchasing power of money in different countries is not possible. We have no trustworthy measure for the absolute purchasing power of a currency in its own country. With index numbers, we are only able to determine the relative changes in this purchasing power from time to time. If such changes in the purchasing power of the currencies to be compared have taken place, they must be reflected in the rates of exchange. If we base our inferences on the assumption that, with a constant purchasing power of money in the two countries, the rate of exchange between them has remained for a long time in equilibrium, then we may regard this rate of exchange as a purchasing power parity based on practical experience. If changes in the internal purchasing power of the currencies take place, the new purchasing power parity arising out of these changes may be calculated by multiplying the old purchasing power parity by the ratio of the changes in the internal purchasing power of the currencies. This method naturally presupposes that no changes in the conditions of international trade have

taken place in the interim which would have altered the equilibrium level of the rates of exchange – that is, the purchasing power parity – even if the value of money had remained constant. Important changes in the internal purchasing power of money have a much greater influence on the rates of exchange than any other alterations in the real conditions of international trade which come into consideration. The arithmetical process reproduced above is therefore satisfactory for a first rough calculation of the new equilibrium level of the rates of exchange after big monetary changes have occurred.

The changes in the equilibrium level of the rate of exchange which take place between two countries whilst the value of money remains constant are, in the nature of things, generally on a small scale. For, if a country carries on a brisk trade with another country, there are then a large quantity of commodities which may possibly be imported or exported. At the prevailing rate of exchange, imports or exports only take place to a certain definite extent. Let us now assume that, whilst the value of money remains unchanged, a small shifting occurs in the rate of exchange. Then a relatively important change is made in the volume of imports actually possible, and simultaneously exports are affected in the opposite direction, so that a relatively large shifting of the balance of trade from its equilibrium position will take place. Strong forces will then be set up to bring back the rate of exchange to its former equilibrium level. This signifies that the rate of exchange in its equilibrium position – always on the assumption of a constant value of money – possesses a great stability, that is, a great power of resistance against changes in the real conditions of international trade which tend to shift the rate in one direction or the other.

The supposition of a constant internal value of money in each of the countries under consideration is here of great importance. For the rate of exchange has no powers of resistance against changes in the internal purchasing power of money in one or other of the countries, but must passively allow itself to be adapted to such changes. If we term the equilibrium position of the rate of exchange as here defined, “the purchasing power parity,” this designation is

also justified by the fact that, from the point of view of its effectiveness, by far the most important factor in the determination of the rate of exchange is the internal purchasing power of the currencies in the two countries. If we suppose that, whilst the price-level remains constant in *A*, all prices in *B* rise ten times, so that the internal purchasing power of the *B* currency is reduced to a tenth without any changes taking place in the relative level of the various prices, then the conditions of trade with *A* will remain exactly the same as before if the rate of exchange is lowered to a tenth of its former value. The rate of exchange must, in the given circumstances, rise or fall proportionately with the internal purchasing power of *B* currency. Similarly, the rate must change in inverse proportion to the internal purchasing power of *A* currency if any change in the value of money occurs. If there are big changes in the internal purchasing power, as happen during periods of heavy inflation or deflation, then, as already pointed out, the corresponding changes in the equilibrium position of the rates of exchange are far greater than any changes which may be caused by other factors. Of course, this conclusion as to the final results of changes in purchasing power in the two countries does not prevent the movements from having in themselves temporary effects of a purely dynamic character, which will prevent the final results from making themselves clearly felt at once.

The rate of exchange will thus be primarily determined by changes in the purchasing power parity of the two currencies to be compared. After the theory of purchasing power parity focussed attention on the significance of the relative price-level of the two countries in question, it was often pointed out, especially by statisticians, that the equilibrium position of the rate of exchange must be determined exclusively by the price indices of commodities imported and exported. We now see where the error of this reasoning lies. If we assume that prices of all the export commodities of country *B* are doubled, whilst all other prices in *B* remain unchanged, it would not be possible for the rate of exchange to be reduced by a half, as a much smaller fall in the rate would bring out the latent export possibilities of a mass of other commodities of country *B*,

and would prevent a further fall in the exchange. This restrictive influence is reinforced through the difficulties placed in the way of imports from *A* by the fall in the rate of exchange, and its combined effect is so great that the doubling of the prices of exports in question is unable, by a long way, to depress the rate of exchange to half its value. However, the general internal purchasing power of the *B* currency has, of course, fallen, and to that extent one must expect a corresponding fall in the rate of exchange. Over and above that, there will perhaps take place a further fall in the rate as a consequence of a distribution of the general rise of prices which may be particularly unfavourable for the external value of the *B* currency.

If we now wish to consider the specific problem of international trade apart from changes in the value of money, we must assume that the purchasing power of money remains constant in each of the countries to be considered. This assumption, however, cannot be expressed in absolute terms. It can only be so expressed that the general price-level must remain constant. The general price-level is a statistical conception, and, as such, is more or less imperfect. It must be specially noted that we have no opportunity of fixing the conditions for a constant price-level for two different countries in an identical manner. Nevertheless, we may formulate our assumption with sufficient exactness – at least, if there are not too great or far-reaching changes in the economic life of any of the countries in question – so that the problem of international trade is allowed to appear as an independent problem, while the value of money remains constant.

We should make it a rule, when analysing theoretically an economic problem of a non-monetary nature, to introduce from the start the assumption of an unaltered value of money, and in so doing we must presume the money to be a rationally regulated paper currency. As a matter of fact, in the first two books of this work we have treated the entire theory of the determination of prices in this way. Such an assumption signifies that the supply of means of payment is regulated in such a way that the general price-level remains constant in spite of all economic changes. In this manner



the influences of all economic phenomena on the value of money are excluded from the first. If, therefore, in any particular study we come to the conclusion that a rise in certain prices must take place, we must conclude from this that this rise is neutralised by a fall in other prices. Even when we cannot state exactly which prices are so influenced the necessity for such a fall in prices remains.

What has just been said applies also to the theory of international trade. If we wish, in this connection, to study phenomena which have their foundation in non-monetary causes, then, in each of the countries in question, we must assume an unaltered value of money. Changes in the real conditions of international trade cannot then have any effect on the general price-level in any of the countries. On the other hand, they may always exert an effect on the rate of exchange, and the study of these effects, which we may term "intervaluta" effects, naturally belongs to the theory of international trade.

Formally, this problem appears in a different light when we consider countries on a gold standard. It is true that the gold standard, according to the point of view expressed in this book, is a paper standard also. This paper standard, however, is regulated not with the idea of keeping the internal purchasing power of money constant, but with the idea of maintaining the gold parity of the currency. Let us assume that country *B* is a large country which always maintains the gold currency intact, and, for the sake of simplicity, let us assume that this is carried out under a constant price-level, so that country *A* will only have to see that its currency is kept at a gold parity, as shown by the constancy of the rate of exchange on *B*. Those factors, which under our previous assumptions would have produced changes in the rate of exchange, will instead now result in changes in the general price-level in country *A*. This new formulation does not alter anything in the essential causal sequence of the case previously considered. If, under the assumption of a paper currency with a fixed internal purchasing power, the rate of exchange on *B* had risen as a result of an alteration in the conditions of international trade, then the same cause, under a constant rate of exchange, would have led to a fall in the general

price-level in country *A*. We may, therefore, study the "inter-valuta" effects of international trade under a gold standard also, which in many cases is clearly necessary if we wish to examine the problem on the basis of actually existing material. But for the theoretical explanation of the problem the assumption of a paper currency with a fixed internal purchasing power is much more advantageous.

### § 83 *Pricing under International Trade*

The necessary condition for international trade to take place between two countries is that a certain inequality exists in the relative prices of commodities, and that in certain directions this inequality is strong enough to overcome the obstacles of the costs of transport. The driving factor of international trade is thus the inequality of prices in the various countries, which is based on the differences in the given factors of the price-structure; that is, in the supply of primary factors of production, of technical coefficients, and in the nature of the demand. International trade, as we shall see in more detail later, has certainly a tendency to smooth out inequalities in commodity prices. But this never actually happens, for the whole price-system will reach an equilibrium position, where the differences in the economic factors in the two countries are proof against the tendency of international trade to equalise prices. We shall now study this position of equilibrium more closely.

When two previously isolated countries enter into commercial relations with each other, there is a fairly far-reaching change in all economic conditions. In country *A* the branches of production which work at a relatively high cost are given up, and by way of compensation other branches of production, in which *A* has a relative superiority, are more intensively exploited. The same takes place in country *B*. The primary result is thus a division of labour. This need not embrace all the branches of production, for as a rule there are branches where no exchange at all is possible between the two countries. This division of labour leads to a far-reaching change in the whole price-structure in the two countries. For in country *A*

prices of commodities imported from *B* must, allowing for the transportation expenses, coincide with the prices prevailing in *B*, and are thus different from what they were before international trade took place. Also, the prices of goods exported to *B* are generally changed, since they are now the subject of demand from *B*. If, however, such important changes take place in the price-structure, then the whole structure changes, and we have an entirely new process of pricing.

Commodities which may be exchanged are generally not only finished products, but also primary factors of production and intermediate products of all stages. The requirement for the exchange is that the expenses of transport can be covered. This requirement varies according to the nature of the commodity. For a whole series of commodities transportation is impossible. This applies to a primary factor of production such as land, and also in a great degree to finished products such as houses. If we consider that production, according to our view-point, is not finished until the finished product is placed at the disposal of the consumer, then, in most cases, a transfer of finished products in the strict sense is impossible. The prepared meal served in a restaurant may contain substances coming from nearly all foreign countries, but in its final form it is a home product. International trade is thus, to a predominant degree, carried out in intermediate products.

The theory of international trade for the most part has been built upon the assumption of a complete immobility of the primary factors of production, together with a more or less perfect mobility of finished products. It has thus undertaken the task of studying directly the levelling effects of trade on the prices of finished products, and, from this, on the prices of the primary factors of production. Such a conception of the problem is in no way justified by the nature of things. An exchange between the two countries may take place in all stages, from the primary factors of production right up to the finished products, and this exchange has everywhere a certain price-levelling effect. If this effect acts directly on the prices of the primary factors of production, then it brings about indirectly a corresponding adjustment of the prices of finished goods produced

with their help. As we shall see more closely below, there are characteristic differences between such an adjustment in the direction of production and an adjustment in the opposite direction. The latter is weaker than the former. The problem is symmetrical in so far as all the prices have the same position in it. The problem of pricing under international trade does not differ in this respect from the problem of pricing in an isolated country. As we know, this may be represented only by a system of simultaneous equations. The same necessarily holds good for the problem which now confronts us. It is our task to adumbrate the general character of the system of equations that represents the price-structure under international trade.

We must start from the assumption that trade between the two countries *A* and *B* has reached a position of equilibrium, and we have to examine the conditions for the continuation of such an equilibrium. As in our treatment of the general problem of pricing we may then assume the prices of the primary factors of production to be our unknowns. We have, then, two series of such prices, namely, one for country *A* and one for country *B*. There now arises a further unknown, namely, the rate of exchange between the two countries. The appearance of this new unknown, as already pointed out, is what actually characterises the pricing of international trade as an independent problem.

Let us assume for the time being that all these unknowns are given; then we may calculate the costs of production and also the prices of the finished goods, assuming that they are produced both in *A* and in *B*. We can thus see which is the lower price for every finished commodity. If costs of transport are taken into account, we may add these costs to the prices of the imported commodities. We shall then know whether the home products or the imported products are cheaper, and we may then choose the lower price. The higher price concerns us no further. In this way we may calculate all the prices of the finished commodities for *A* as well as for *B*. In so doing the demand is determined. We know how much of each commodity is demanded in *A* and *B*, and we know also how much of the various primary factors of production are used in

the two countries to satisfy this demand. In equilibrium, these quantities must agree with the given quantities of the primary factors of production in each of the countries. We then have a number of equations corresponding to the unknown prices of the primary factors of production. However, we need still another equation, because, as we have already pointed out, we have yet another unknown – that is, the rate of exchange. This new equation represents the condition that *A* buys exactly as much from *B* as it sells to *B*, so that the balance of trade is in equilibrium. We now have just as many equations as there are unknowns, and so the system of equations is determined. As we have assumed that each individual country, as such, maintains a constant value of money, all prices are also absolutely determined.

This solution which at once clears up the essential nature of pricing under international trade,<sup>1</sup> has been built up entirely upon the principle of scarcity; that is, it is assumed that the costs of production are determined in every single case as soon as the prices of the primary factors of production are given. In those cases where this is not so, we must make use of supplementary principles of pricing in order to make the problem definite. These supplementary principles modify the conclusion which has been reached but alter nothing of the principle underlying the chain of causation represented by our system of equations. The demand for finished products in *A* is indirectly a demand for primary factors of production in *A* as well as *B*. The same applies, of course, to the demand in *B*. There is, therefore, a collective demand for factors of production in *A* and a collective demand for factors of production in *B*. These demands must be limited by sufficiently high prices being charged for the various factors of production. In this way an equilibrium position is attained for both countries, the whole of the factors of production are in full employment, and the demand in the two countries is satisfied according to the willingness to pay.

This position of equilibrium is naturally quite different from that

<sup>1</sup> Bertil Ohlin, of the Stockholm Commercial Academy, in his doctor's dissertation, was the first to give such a solution of the problem of international trade, and I am indebted to this work for many suggestions. However, in the text I do not follow his treatment of the problem.

which would have arisen in each country had there been no international trade. On the whole, a certain adjustment has taken place between the prices in the two countries; that is, a certain *rapprochement* has been achieved between the relative prices in the two countries. As has already been emphasised, the price adjustment is partly direct and partly indirect. A direct adjustment, excluding costs of transport, takes place for every commodity which can be directly exported from one country to another. An indirect price adjustment takes place in two different directions; first, in the direction of production, or from commodities of an earlier stage in the process of production to commodities in the later stages; and secondly, in the opposite direction – that is, from finished products to their means of production situated more or less far back.

The nature of the first process may be best appreciated if we assume that the primary factors of production can be transferred without expense, but that there are no other possibilities of transfer. The price adjustment is then perfect for the primary factors of production, and every country will be equipped with them according to its willingness to pay. If we now suppose the state of technique to be the same in both countries, then the equality of prices of the primary factors of production results in a complete equality of prices of the finished products.

The adjustment of prices in the opposite direction is not so effective. We obtain the best idea of it if we consider the simplest case, in which the elementary factors of production are not transferable at all, but, on the other hand, finished products may be transferred without expense. The effect of international trade is, then, to bring about a division of labour. Each country produces only those commodities for whose production it is especially favourably situated; the remaining commodities are imported from the other country. The price of a commodity which *A* imports from *B*, it is true, is equal to the price prevailing in *B*, but cannot be compared with the domestic price, as this commodity is not produced in *A* at all. With regard to the factors of production, a certain price adjustment takes place. A factor of production which

is particularly abundant in *A* must, in a condition of isolation, make place for itself in the demand, in that its price is kept very low. An exchange of finished products having been established, this factor of production will be an object of demand on the part of *B* also, originating in the demand for commodities produced with the help of this factor of production in *A*. The total demand is therefore now greater than before. This does not signify that the demand can be satisfied to a greater extent, for the supply of the factor of production in *A* is fixed. It does signify, however, that a higher price must be charged in order to restrict the demand. If *B* is especially poorly equipped with this factor of production, then, in a condition of isolation, its price must be raised to a very high level in order to limit the demand sufficiently. After international trade has been established, this factor of production need no longer bear the full brunt of the total demand for itself in country *B*, as this demand can be satisfied with the aid of the corresponding factor of production in *A*. It may be that it will be demanded by branches of production which work also for the demand in *A*, but which require only a small quantity of this factor of production. On the whole, the demand will be less than formerly, and may be kept within the necessary limits at a lower price.

The price of the factor of production has, then, risen in *A*, but has fallen in *B*. Simultaneously, there has taken place a corresponding price adjustment in the opposite direction for the other factors of production. A complete adjustment, however, does not take place. The relative scarcity in each country of the various factors of production maintains an influence on pricing which counterbalances, in the equilibrium position, the price-adjusting tendency of the exchange of finished products.

Let us assume for the sake of simplicity that only three factors of production – land, labour, and capital – are present in the two countries, and that both countries are approximately equally well supplied with capital, but that *A* is rich in land and poorly supplied with labour, whilst *B* is poorly supplied with land and well supplied with labour. Before international trade takes place, *A* has low prices for land and high rates of wages, whilst *B* has high prices for

land and low rates of wages. Such a comparison is naturally quite relative. We have no opportunity of comparing rates of wages and prices of land in *B* directly. Only when we consider them from the standpoint of *A* are we able to state that there is an inequality in the price-structure of the two countries. If international trade takes place, there is a division of labour, whereby *A* prefers to concentrate on those branches of production which require much land and little labour, whilst *B* prefers those branches which require much labour and little land. Land in *A* will then be the object of demand not only from *A*, but also from *B*. This demand is directed in all cases on finished products which require especially large amounts of land for their production, and thus represent in their entirety a greater demand for land in country *A* than did the previously existing demand. As a result, the price for the use of land in *A* rises. The small supply of labour in *A* will be utilised in those branches of production in which relatively little labour is required. In spite of labour in *A* being demanded by *A* as well as by *B*, this total demand is weaker than previously, and rates of wages fall in *A*. An opposite movement takes place in *B*. It is in this way that the price-adjusting tendency of international trade operates.

In equilibrium, the price of land in *A* is, of course, still lower and the rate of wages still higher than in *B*. A more extensive exchange of commodities cannot take place, for the reason that the countries have now fully concentrated on those branches of production which are most advantageous to them. If *A* were to attempt to monopolise yet another branch of production from *B*, it would have to be a branch where relatively little land and much labour were necessary – that is, a branch of production which is not particularly suited to *A*. Having regard to equilibrium under international trade, this could not take place without *B* monopolising a branch of production from *A*, which would also be less suitable for *B*. These conditions give a definite stability to the position of equilibrium. Thus we see that the inequality in the distribution of primary factors of production, which must result in a corresponding inequality in the price-structure as long as the countries are isolated, represents a factor which is also effective after international trade



has arisen, and which can only be partly eliminated by the exchange of finished products.

The advantage derived from international trade consists primarily of the fact that demand is confronted with a more varied supply of primary factors of production. It is not necessary, therefore, for demand to be restricted so narrowly or for prices to exert such a great pressure as in a condition of isolation; demand may be satisfied in a more varied and harmonious manner. It is easier to conform to the principle of scarcity under international trade, and its rigour is mitigated.

Also with regard to the supplementary principles of pricing, the situation is more favourable under international trade than in a condition of isolation. For example, the principle of substitution is better applied, because the production of a commodity may be transplanted to a country where the requirements for a technically favourable co-operation of the factors of production are best realised or because mobile factors of production may be assembled in a country where the best possibilities of substitution are to be attained. International trade thus promotes the most effective – that is to say, the cheapest – production.

International trade has a similar effect when it renders possible a concentration of production in large-scale units, which work with less expense than the relatively small firms which would exist in isolated countries. Thus, through international trade, the principle of the diminution of costs through aggrandisement of the business unit obtains a wider and more productive scope.

The benefits accruing from international trade consist, as we have seen, of the mobility it introduces into regions which were formerly isolated. If there were complete mobility and no costs of transport, we should have the state of affairs from which we started out in our fundamental treatment of the general theory of pricing – that is, a state of affairs in which there was a uniform price for each type of commodity. This would mean the greatest economic effectiveness. Now, international trade can never bring about complete mobility, nor totally eliminate the condition of isolation. The economic effectiveness which it produces is thus only relative,

and represents a stage lower than the ideal economic effectiveness of complete mobility. Nevertheless, the effectiveness attained is the greater, the greater the mobility, and every diminution in mobility signifies a reduced effectiveness in the whole economic system.

It must be noted that the benefits of international trade can only be judged socially – that is, for the whole country. From the point of view of the individual, international trade results in losses as well as profits. As prices are increased or decreased for certain primary factors of production, so different vested interests are affected in different ways. One group may see its income increased whilst another group may suffer great losses. This is, of course, the reason why the benefits of international trade are judged so differently. Everyone bases his opinions on his own private experience, and from this makes up his mind about the advantages or disadvantages of international trade and also of the correct commercial policy. Naturally, it is impossible to reach a conclusion in this way. The effects of international trade must necessarily be judged from a general social economic standpoint.

#### § 84 *The Significance of International Movements of Capital*

We have studied the problem of equilibrium in international trade on the assumption that no credit is given and that a country must pay for its imports over a period entirely by its exports. We found that, on this assumption, a definite rate of exchange is established and that, generally, the entire price-structure of the countries trading with one another is determined. If international movements of capital were actually to exercise a material influence on the rate of exchange, our solution would clearly have only a very limited value and would scarcely get to the root of the problem of equilibrium in international trade. We shall soon see that this is not the case, but that, in reality, a transfer of capital from the one country to the other has no material significance as far as the rate of exchange is concerned.

Let us first consider the simplest case of a direct transfer of

capital. We shall, therefore, assume that the savers in country *A* have a certain purchasing power at their disposal which they are willing to invest, not as usual in newly produced real capital, but in a loan to country *B*. We shall also assume that *B* uses this to buy a newly produced capital good from *A* – a ship, for example. In *A* the means provided by the savings in question thus serve to buy newly produced real capital just like any other kind of savings. The total production of real capital is therefore maintained at an unchanged level, and consumption is not diminished in the slightest degree. Country *B* has acquired a new piece of real capital, but has paid for it with the means provided by the loan. This transaction leaves the economic life of the country, for the moment, completely undisturbed. The remaining trade between the two countries is likewise left undisturbed, and the condition of equilibrium in this trade is the same as before. The rate of exchange is therefore unaltered.

Let us suppose that country *B* raises a public loan in country *A*. We can say that *B*'s securities are exported to *A* as payment for the import of real capital. If we look at these securities as objects of international trade we can thus formally uphold the principle that equilibrium in international trade is attained when both countries buy exactly the same amounts from each other. We find by means of this that we can preserve a formal unity in our treatment of the theory of international trade. It is then easy to see how the enlargement of international trade which occurs as a result of the transfer of capital in question does not exercise a material influence upon the trade already existing, and consequently, also, on the rate of exchange.

The case which we have discussed is a good theoretical example of how a transfer of capital takes place. But in practice complications arise which modify the transaction somewhat, without, however, altering the principle. Let us suppose that *B* constructs a railway with the help of a loan from *A*. The means provided by the loan can be utilised in several different ways. In the first place, as in the case considered above, *B* can import real capital in the shape of locomotives or rails, etc., for the new undertaking, and pay for

it in securities. Secondly, *B* can reduce its exports to *A* and in this way release productive powers which can help to build the railway. This happens, for example, when wood, instead of being exported as before, is used to erect railway-station buildings. The same thing also happens as soon as workers are attracted from an export industry to the new railway under construction. The total exports from *B* to *A* are reduced in this way. The deficit in the balance of trade that arises from this is, however, set off by the means provided by the loan in country *A*. Thirdly, *B* can also increase its imports of consumption goods from *A*, and pay for these surplus imports with the help of the means provided by the loan. This takes place, for example, when agricultural labourers leave their work in order to find employment on the railway which is being built. In that case the production of corn will probably be diminished, and *B* will have to import a corresponding quantity of corn from *A*. In all these three cases a deficit in the balance of trade will result. The total deficit, however, is covered by the loan. *B* exports a quantity of securities, which corresponds exactly to the deficit that has arisen in the balance of trade. Equilibrium is then maintained, and there is no question of an alteration in the rate of exchange taking place. The same holds true when *B* raises a loan for purely revenue purposes, in order to meet national expenditure. The vital point in the concept of a transfer of capital is clearly the transfer of purchasing power: it is a relatively minor matter what products *B* buys from *A* with the help of this purchasing power.

Meanwhile, we must take into consideration the fact that the transfer of capital envisaged above may lead to certain changes in demand and thus also to certain internal price adjustments in both countries, and that, as a result of the change brought about in the conditions of equilibrium in international trade, a definite alteration in the rate of exchange may take place. But such adjustments are, as a rule, undoubtedly of very little importance. In country *A* the loan represents a sum of savings which, if they had remained in the country, would have had to be used to purchase newly produced real capital. If *B* uses the loan for the same purpose, a procedure which may be regarded as the normal course, its special demand for

capital goods will certainly alter the production in *A* to a certain extent, but for all that there will probably be no visible changes in the price-structure in *A*. For, on the whole, it must almost be a matter of indifference to the price-structure whether demand is directed at ships, or locomotives, or agricultural machinery, and so forth. If *A* is a well-developed industrial country, possessing an economic life which is richly varied and highly advanced, its industries will certainly be marked by such a great capacity for adaptation that they will be able to satisfy every demand that arises as a result of loans made abroad, without internal prices being affected to any noticeable extent. In country *B* small adjustments in prices are perhaps to be expected. The transfer of labour from one trade to another (which we supposed to take place above) cannot in all probability be accomplished without the workers in question demanding definite increases in wages. Their purchasing power is thereby increased, and this will probably have some effect on the internal price-level in *B*. But if *B* is at all a developed country, a foreign loan will very seldom produce such a revolution in its economic life as to cause a material alteration in its entire internal price-structure. If, however, only smaller relative adjustments occur in the internal price-structure of each of the two countries, these will not produce a noticeable alteration in the rate of exchange between the countries, for we know that the rate of exchange has a high degree of stability, and that, consequently, when there is a small fluctuation in it, strong tendencies arise in practice to offset this fluctuation.

There is a widespread notion that a loan from one country to another must, in consequence of the transfer of purchasing power, lead to alterations in the general price-level in both countries. It is thought that the total purchasing power of *A* must be reduced and that of *B* increased, and that, as a result, a fall in the general price-level in *A* and a rise in that in *B* are to be expected. This notion is clearly wrong. A transfer of capital to *B* is only possible if *B* buys goods in *A* and pays for them with the means provided by the loan; on this account the transfer of capital can neither reduce the purchasing power in *A* nor increase it in *B*.

As long as we maintain our assumption of a constant money value in each of the two countries, fluctuations in the general price-level are naturally formally excluded. The assumed effect of the transfer of capital must then, instead of altering the general price-level, find its expression in a corresponding alteration in the rate of exchange. But as the whole reasoning rests upon a misunderstanding of the nature of international capital movements, there is no ground for assuming that such an effect will take place.

The examples which have been adduced to demonstrate the tendency of an import of capital to raise prices are not susceptible of proof, and can scarcely withstand detailed criticism. The commonest error in connection with this is that the capital is conceived as being imported into an undeveloped country. In such cases, a fairly general rise in the prices of the commodities produced in the country itself may very well take place. This rise in prices, however, results from the fact that the country attains a more intimate economic contact with the outside world, and it therefore cannot be regarded necessarily as a result of the import of capital. Nor is a rise in prices so general that it can be regarded, in any strict sense, as a diminution in the value of money.

It is, however, conceivable that a large loan should exert a certain influence for a time upon the rate of exchange. If, that is to say, *B* possesses for the time being a very large credit balance in *A* currency as a result of a loan made by the latter, and if the individuals holding this credit balance are eager to realise it in order to acquire *B* currency, a definite pressure can undoubtedly be exerted during this period on the value of *A* currency, which will therefore cause *B*'s rate of exchange to rise. As a rule, such a pressure will soon weaken, on account of *B*'s purchases from *A* increasing and sales to *A* decreasing. An actual levelling-out of total payments between *A* and *B* must, under all circumstances, be accomplished for each day's transactions. No more purchasing power can therefore be transferred at any time than the surplus purchases allow. A transfer of capital *in abstracto*, as the public delights to think of it, simply does not take place. The necessary settlement of payments, however, can sometimes only be brought

about when there is a definite pressure on the value of *A* currency. This pressure naturally increases the difficulty, under which the recipients of the loan labour, of transferring the loan, and constitutes an inducement for them to delay the transfer, at the same time as it is also naturally an incentive for other people who have *B* currency at their disposal to take over credit balances in *A* as a speculation for a profit on the exchange, thereby enabling the owners of such credit balances to exchange them for *B* currency.

What we have said here with regard to the case of a fixed loan is naturally also valid in the case of short-term movements of capital which are always taking place between big financial centres, on the ground, for example, of a difference in the interest rates. We must expect such capital movements to bring about transitory, though fairly limited, fluctuations in the rate of exchange.

The whole question of the actual formation of the rate of exchange and its deviations from the purchasing power parity can naturally only be studied in an empirical manner. In such a study we have to choose two countries which possess comparable indices of the movements of the general price-level, so that possible changes in the internal value of money in the one or other country can be eliminated. I made an investigation of this type with regard to England and the United States for the period extending from the beginning of 1919 up to October, 1924.<sup>1</sup> The fact emerged that, during this period, the dollar was alternately over- and undervalued. Let us reckon a value corresponding to the purchasing power parity to be equal to 100; an overvaluation of the dollar occurs when the value exceeds 100, and an undervaluation when it is less than 100. On calculating the average of this percentage value we find that, over the whole period, there was an average overvaluation of the dollar amounting to 0.3 per cent. This deviation from the purchasing power parity is extraordinarily slight, and in fact is kept entirely within the limits of error of the material from which the calculation is made.

We thus arrive at the conclusion that the rate of exchange, apart from occasional fluctuations, corresponds exactly to the calculated

<sup>1</sup> *Quarterly Report of the Skandinaviska Kreditaktiebolaget*, April, 1925.

purchasing power parity, or, in other words, that the new equilibrium level of the rate of exchange deviates from the former equilibrium level only to the extent of the alteration it has caused in the relative value of money. This means that the equilibrium level of the rate of exchange, if reduced to terms of an unaltered relative value of money, has remained unchanged in spite of all economic disturbances. The experience gained since England returned to the gold standard has shown that the validity of this conclusion is also upheld by a comparison between the pre-war era and the present time. At any rate, by virtue of the same general rise in prices, the equilibrium level of the rate of exchange between the two countries is now the same as before the war. The view taken here, that changes in the economic conditions of international trade have only a slight influence on the equilibrium level of the rate of exchange, is confirmed in a striking fashion by these facts.

A closer study of the value of the dollar in pounds sterling during the period 1919-24 shows that the origin of the deviations of the actual rates of exchange from the purchasing power parity is to be found essentially in international movements of capital. In periods of particularly liberal granting of American credit to Europe a definite undervaluation of the dollar has conclusively taken place, while in periods when the Americans have stopped granting credits to Europe a definite overvaluation of the dollar has occurred. The relation between interest rates in New York and London is of some importance, too, as regards fluctuations in the value of the dollar. Thus, as soon as interest rates are lower in New York than in London, liquid American capital tends to flow to London. Undervaluation of the dollar may then well ensue. Deviations of the dollar exchange from the purchasing power parity amount as a rule to less than 5 per cent., but in exceptional cases exceed even double this percentage. For the most part, however, their duration is a matter of a few months only.

This should suffice to explain the general nature of the influence of international capital movements on the rate of exchange. Our conclusion undoubtedly has substantially the same validity for an outflow of capital to less highly developed countries, although in



such cases we must expect greater and, perhaps, somewhat more lasting deviations from the purchasing power parity.

From our study of the movements of the dollar exchange over the period in question we are able to draw yet another important conclusion. In September, 1922, the new highly protective Fordney Tariff was introduced in the United States. In accordance with the customary view, it was expected that, as a result, the exchanges remaining constant, there would be a considerable rise in the general price-level in America; in other words, that the dollar would be considerably overvalued. This was not the case. It is true that the dollar was substantially overvalued in the autumn of 1922, but this overvaluation is explained quite naturally by the decrease which then occurred in the amount of American credit granted to Europe. After a few months the dollar exchange returned more or less to normal, and in 1924 the dollar was undervalued for some time. This fact is calculated to destroy the basis of the popular view of the effects of an increased protective tariff upon the general price-level. The statistical data usually quoted to support this view cannot, speaking generally, stand serious criticism.

In the years 1929-30, American grants of credit to other countries underwent a considerable reduction. During that period, too, there occurred from time to time a substantial overvaluation of the dollar, to which the breakdown of international confidence also contributed. In view of these extraordinary disturbances it is not possible to make any study of the effects of the intensification of American Protection brought about in 1930. Not until normal conditions are restored in the international capital market shall we be able to form any judgment as to these effects.

### § 85 *Practical Conclusions*

We have now reached a point at which we are able to indicate the general framework for dealing with practical problems of international trade. Such problems arise chiefly in determining the effects of changes in the terms of international trade, and in this the effects on prices in particular come to the fore. The question

of the effects of a protective tariff upon prices constitutes the most important group of such problems from a practical standpoint.

In discussing such questions, the need for drawing a sufficiently sharp distinction between relative changes in prices and changes in the general price-level is usually neglected. It is seldom laid down with sufficient clearness that changes of the latter kind are monetary in character, that they imply changes in the monetary unit in which prices are reckoned. Consequently, too, the change in relative prices, which is something quite different in character, does not stand out as an independent phenomenon. In addition, there is the fact that the effects on the general price-level are generally greatly over-rated, both as regards their extent and their economic significance. In all these respects our theoretical presentation of the problem of international trade is designed to prepare the way for a clear and accurate treatment of the relevant practical questions.

We thus suppose that a certain change has occurred in the conditions of international trade, that, for example, a certain country has adopted a higher protective tariff. The problem is to determine what effect this change has on prices. We have first of all to state that the effects on the general price-level of the country, or on the international value of its currency, are purely monetary phenomena, and as such are to be dealt with and judged in isolation. On the whole it may be assumed that such effects, if they do appear, will only be small in extent, and further, that, once a new position of equilibrium has been reached, they cannot have any greater economic importance.

These effects vary, as to the form they take, with the currency laws of the particular country. We may assume for purposes of simplicity that the rest of the world has an unchanged currency, and, if it has a gold standard, that gold itself has a constant value. If the country we are considering has an independent paper currency, any change in its general price-level must be regarded entirely as an independent change in its monetary unit. This change is an arbitrary one, and could be avoided by means of a suitable monetary policy. We have therefore to eliminate this type of change, which we do by reckoning all prices, including the price of foreign

currency, in terms of an unchanged price-level; it may then perhaps be revealed that a certain slight change has occurred in the international value of the currency – that is, in the rate of exchange. This change is the actual monetary effect of the assumed change in the terms of international trade. A change of this kind in the foreign quotation of the currency, which has taken place while the price-level remained unchanged, naturally possesses a certain significance as regards international trade in that it affects the terms both of importation and of exportation. In most cases, however, these effects are, of course, of minor importance.

If the country has a gold standard, and that gold standard is so rigidly maintained that the rate of exchange remains practically constant, it is possible that, as a consequence of a change in the terms of trade, an alteration, let us say a rise, may take place in the general price-level. In most cases this rise is very limited. It makes no difference whatever to the internal market once a new position of equilibrium has been reached, since it does not matter what monetary unit is the basis on which prices are reckoned. As regards external trade, a rise of this kind in the general price-level clearly means an encouragement of imports and a discouragement of exports. These effects, however, are only minor reactions against the direct effects of the change in the conditions of international trade. If, for example, the change consists in a higher tariff wall, the direct effect is a discouragement of imports; this effect is somewhat diminished as a result of the rise in the price-level.

In any case, the raising of the general price-level is a phenomenon apart which must be isolated from the relative change in prices. This can best be done by dividing all prices by the increase in the general price-level, that is to say, by reducing the country's internal prices, as in the case of the paper currency, to a constant money value. We then see that price increases are exactly counter-balanced by price diminutions. Relative price changes which come about as a result of the changed terms of trade thus exist to an equal extent in rises in prices and in reductions in prices. It is these changes which, in practice, are of importance. They imply a change in the distribution of income which, naturally, is advantageous to some of

the population and disadvantageous to others. As regards the whole national economy a change has taken place in the bias of production, as a result of which the national income is affected. Nothing can be said in general with regard to these effects. If the change in the terms of trade consists of some arbitrary interference, such as an intensified tariff policy, it may as a rule be safely assumed that production will be diverted into less profitable channels, and that the present aggregate income of the country will consequently be diminished, but this does not prevent the possibility of gaining other advantages.

Any calculation of the ultimate result, by aggregating the changes which it is thought possible to ascertain in regard to individual prices, is in any case impossible. In particular we may stress the fact that calculations of the "burden of the tariff," to which it is usual to attach such great importance in politics, are without any foundation whatever. It is, of course, recognised for the most part that the statistical data available for making such a calculation are inadequate, and that the rise in price which the tariff brings about in the case of every protected commodity cannot always be properly estimated. These deficiencies are, however, of secondary importance compared with the fact that the "burden" which it is desired to calculate has no definite conceptual meaning. If, for every article, the rise in price is multiplied by the quantity consumed, and all these "burdens" on consumers are added together to give a total burden, we are overlooking the fact that, if the value of money does not change, rises in prices must be offset by approximately the same amount by reductions in prices and that, therefore, the addition, if it be extended to those objects which have fallen in price, would in fact have to yield a sum in the neighbourhood of zero. The fact that a tariff which brings about rises in prices must also result in falls in prices should be rather illuminating if one considers that rises in prices necessitate heavier demands on the purchasing power of the population, so that there necessarily remains a smaller amount of purchasing power for other commodities. If the rises in prices were not counterbalanced by any diminutions in prices, this could only mean an increase in aggregate nominal

purchasing power, which, however, would be tantamount to inflation of the currency. If in fact such a change in the value of money has occurred, and a position of equilibrium has been reached on the basis of the new value of money, the higher figures in which prices are henceforth reckoned do not imply any "burden." Accordingly, any change in the value of money must at once be eliminated from a discussion of the effect of the tariff; that is to say, the discussion must be conducted on the assumption of a constant money value. But if this is so, rises in prices and reductions in prices must in the aggregate counterbalance each other. Any calculation of the total burden of the tariff is therefore completely meaningless.

In any practical treatment of questions of tariffs, the effect of Protection on the general price-level may as a rule be ignored, without thereby giving rise to any appreciable error. From this it also follows that the motive behind a particular tariff policy cannot be to protect a higher price-level as against countries with a lower price-level. Protection of this kind clearly cannot be achieved to any considerable extent. And if it is actually achieved, it is insignificant in the long run.

The argument in favour of a general protective tariff which is of the greatest importance at the present time is expressed in the view that it is necessary in order to protect a country with a high labour standard against countries with a lower standard. This view forms the basis, on the one hand, of a policy of high protection in a number of countries which have a high labour standard, and, on the other, of the attempts to secure uniformity of labour standards throughout the world. By the term labour standard we are to understand not only the general level and effectiveness of labour legislation, but also the conditions of labour which are maintained by the trade unions. The term labour standard further embraces not only the regulation of hours of labour and other technical conditions of labour, but also the regulation of wages themselves.

Attempts to protect the labour standard naturally imply that a higher labour standard will raise costs of production. If this were not the case, no special protection would, of course, be necessary.

It would, however, be giving a very bad recommendation of the efforts to raise the labour standard if we were at once to assume that such a rise must inevitably raise costs of production. In practice, of course, this is not so. A reasonable rise in the labour standard should, in the long run at any rate, be followed by a corresponding increase in the productivity of labour. On the whole, too, the economic possibility of the higher labour standard becoming permanent depends upon a corresponding increase in efficiency.

The protecting of a high labour standard by means of tariffs necessarily implies, as we have said, that in some cases at least production will be made dearer as a result of the higher labour standard, and will not be able to compete with production which is carried on under a lower labour standard. The question then arises whether such a branch of production shall be maintained in the country with the higher standard. It may be better to give up that branch of production and leave it to a country which has a lower labour standard, and to concentrate on those branches of production in which, despite the higher labour standard, the first country possesses a certain superiority. The advantage of international trade consists, as we know, in the division of labour and in the concentration of production in each country on those branches of production in which it has some superiority. This generally recognised advantage, however, does not depend upon the causes of that superiority. International division of labour finds its economic justification not only in differences in natural resources, climate, etc., but also in differences in labour standards. It is possible, for example, that a country with a nine-hour day may possess a certain superiority in particular branches of production, but that another country with an eight-hour day may with advantage concentrate upon branches of production in which it is not particularly hampered by the shorter working-day and in which, despite the eight-hour day, it possesses a measure of superiority. This latter country will then have to leave over certain branches of production to the country with the nine-hour day, and will have to acquire those particular goods by exchange. In this way it is possible for international division of labour to arise between countries with different

labour standards, to the advantage of all the countries concerned. The existence of some industry abroad which, by reason of its low labour standard, competes at an advantage is therefore not an adequate reason for the introduction of a tariff.

If we assume that the labour standard in a particular country is continually being forced up, that country will at first lose one branch of production after another. But it will regard the loss of these inferior branches of production with equanimity, and will instead concentrate its productive powers on other branches of production. This re-direction of production cannot, of course, be continued indefinitely. There comes a time when a further rise in the labour standard will jeopardise the existence of a branch of production which simply cannot be given up. The highest labour standard possible under the given conditions has then been reached, and the efforts to raise the labour standard further have reached their natural limit. This salutary regulation of the labour standard is rendered inoperative if competition on the part of countries with a lower labour standard is eliminated by means of a tariff. In those industries which are protected in this way, the labour standard can still be raised without there being any direct reminder that a level has been reached which cannot be maintained, and the only effect of Protection will thus have been to help to break down the natural uniformity of labour conditions and to produce an artificial distortion in the economic life of the country.

Changes of this kind do not, of course, arise solely in consequence of a tariff; they arise equally as a result of other protectionist measures which are in principle comparable with a tariff, such as the relief of the unemployed. As long as one is prepared to assist in the raising of the labour standard by relieving the unemployed, the efforts to raise the labour standard will not meet with any definite obstacle, and it will be impossible for a natural economic equilibrium to be reached.

The second principal method of eliminating competition due to the existence of a lower standard is, as we have said, that of internationalising the labour standard. Every period in history has its own peculiar doctrines which may not be disputed, and are accepted

generally without criticism. The outstanding doctrine of our time is that of the necessity for international action in matters relating to safeguards for labour. This doctrine seems to be based upon a misconception of the nature of both the safeguarding of labour standards and international trade. We should not by any means regard it as natural for people in all countries to work under the same conditions. On the contrary, the natural working time and hence, too, the optimum working day are necessarily different in different countries. Similarly, wants and consequently, also, the amount of income which is necessary show great variations. International trade has always, up to the present, arisen between countries with widely differing labour standards and has yet, without any doubt, been of great benefit to all countries as a whole, in so far as from it there has sprung a natural division of labour, with a consequently increased productivity of the national economy.

If we take the case of two countries with different labour standards, an economically beneficial division of labour and exchange of goods between these countries can always take place. This is best seen if, in the general theory of international trade which we have developed here, we assume that each country has an independent paper currency. If goods are freely exchangeable, the rate of exchange, as we have seen, will turn out to be such that each country will buy from the other just as much as it sells to it. Where there is a gold standard, this equilibrium will only be reached by a different technical procedure. Thus a lower labour standard cannot, any more than other factors which cheapen production, create a general competitive superiority.

The efforts to internationalise measures for safeguarding labour, or, to put it more generally, the labour standard, which occupy so prominent a place in politics to-day, are thus essentially without foundation from an economic point of view. On purely humanitarian grounds, of course, it may be justifiable in certain circumstances to take steps to secure international adoption of certain protective measures. The dominant motive behind the efforts to secure uniformity of labour standards is, however, undoubtedly protectionist in character. Thus, for example, when Governments meet



at conferences on the internationalisation of the eight-hour day, we can be quite sure that this is not done out of a humanitarian interest in the well-being of foreign workers. The object is simply that of eliminating competition which is regarded as injurious. But such efforts are unreasonable, partly because, as we have just seen, a beneficial international exchange of goods can arise even when labour standards differ, but partly also because uniformity of labour standards is, generally speaking, impossible in the long run. If it does happen that there is forced upon a foreign country a technically higher labour standard than is economically suited to that country, that higher standard must necessarily be balanced by a reduction of income from work. If, for example, it was succeeded in forcing the eight-hour day, which may be well suited to the American pace of working, upon other countries for which an eight-hour day is not by any means the optimum, the consequence could only be that those countries would have to restore their competitive capacity by means of reductions in wages. In that case nothing will have been gained even from a protectionist point of view. The completion of a policy of this kind by the process of keeping out products which are produced by lower paid labour will only force the countries thereby affected down to a still lower standard of life, and will, of course, at the same time hamper international exchange of goods and impair the world economy.

Such efforts are particularly absurd when they are directed against a country from which heavy Government payments are being demanded. If the United States expects European nations to pay their war debts, it must be prepared to accept European goods in payment, even if those goods are produced under low labour standards. The attempt to counterbalance the lower European labour standard by means of particular tariffs is in this case seen to be entirely illogical. The same is, of course, true when the Allied Powers demand a war indemnity from Germany. It would be quite natural if Germany, in order to pay that war indemnity, found herself obliged to work an extra hour per day. It appears to be a highly inconsistent policy if the Allied Powers wished to force Germany

to enter into an agreement with them regarding a uniform eight-hour day. If this succeeded, and payment of the war indemnity were still insisted on, there might be no course left open to Germany other than to reduce wages, which would make up for the reduction in the hours of labour. In no circumstances would it be possible to secure protection against German goods, for, in order to be able to pay, Germany must be in some way or other make herself an effective competitor.

In all such questions of practical commercial policy the theory of international trade which we have developed here is calculated to conduce to clearness. As long as we bear in mind that, at a certain equilibrium of the exchanges, a levelling-out of the balance of trade must always occur, and that any transfers of capital must be effected without any change in that equilibrium, we shall easily avoid the mistakes common in popular discussions of such questions.



# APPENDIX

TABLE I

SAUERBECK'S INDEX NUMBERS, 1846 TO 1913; FOR THE PERIOD 1850-1910, THESE INDEX NUMBERS ARE DIVIDED BY THE RELATIVE STOCK OF GOLD.<sup>1</sup>

| <i>Year.</i> | <i>Index<br/>Numbers.</i> | <i>Index Nos.<br/>Divided by<br/>Gold Stock.</i> | <i>Year.</i> | <i>Index<br/>Numbers.</i> | <i>Index Nos.<br/>Divided by<br/>Gold Stock.</i> |
|--------------|---------------------------|--|--------------|---------------------------|--|
| 1846         | 89                        | —  | 1879         | 83                        | 76   |
| 1847         | 95                        | —  | 1880         | 88                        | 81   |
| 1848         | 78                        | —  | 1881         | 85                        | 79   |
| 1849         | 74                        | —  | 1882         | 84                        | 79   |
| 1850         | 77                        | 77   | 1883         | 82                        | 79   |
| 1851         | 75                        | 74   | 1884         | 76                        | 73   |
| 1852         | 78                        | 75   | 1885         | 72                        | 71   |
| 1853         | 95                        | 89   | 1886         | 69                        | 69   |
| 1854         | 102                       | 94   | 1887         | 68                        | 69   |
| 1855         | 101                       | 91   | 1888         | 70                        | 72   |
| 1856         | 101                       | 90   | 1889         | 72                        | 75   |
| 1857         | 105                       | 93   | 1890         | 72                        | 75   |
| 1858         | 91                        | 80   | 1891         | 72                        | 76   |
| 1859         | 94                        | 82   | 1892         | 68                        | 73   |
| 1860         | 99                        | 85   | 1893         | 68                        | 73   |
| 1861         | 98                        | 84   | 1894         | 63                        | 68   |
| 1862         | 101                       | 86   | 1895         | 62                        | 67   |
| 1863         | 103                       | 88   | 1896         | 61                        | 66   |
| 1864         | 105                       | 90   | 1897         | 62                        | 67   |
| 1865         | 101                       | 86   | 1898         | 64                        | 69   |
| 1866         | 102                       | 87   | 1899         | 68                        | 73   |
| 1867         | 100                       | 85   | 1900         | 75                        | 80   |
| 1868         | 99                        | 85   | 1901         | 70                        | 75   |
| 1869         | 98                        | 84   | 1902         | 69                        | 74   |
| 1870         | 96                        | 82   | 1903         | 69                        | 74   |
| 1871         | 100                       | 86   | 1904         | 70                        | 74   |
| 1872         | 109                       | 94   | 1905         | 72                        | 76   |
| 1873         | 111                       | 97   | 1906         | 77                        | 80   |
| 1874         | 102                       | 89   | 1907         | 80                        | 82   |
| 1875         | 96                        | 85   | 1908         | 73                        | 74   |
| 1876         | 95                        | 84   | 1909         | 74                        | 75   |
| 1877         | 94                        | 84   | 1910         | 78                        | 78   |
| 1878         | 87                        | 79   |              |                           |  |

<sup>1</sup>From *Wholesale and Retail Prices*, London, 1903, and the *Journal of the Royal Statistical Society*.

## THE GOLD SUPPLY OF THE WORLD (IN MILLIONS OF MARKS).

| <i>Year.</i> | <i>Actual<br/>Gold Stock.</i> | <i>Normal<br/>Gold Stock.</i> | <i>Relative<br/>Gold Stock.</i> |
|--------------|-------------------------------|-------------------------------|---------------------------------|
| 1800         | 7,535                         | 2,531                         | 2.98                            |
| 1810         | 7,875                         | 3,332                         | 2.36                            |
| 1820         | 8,033                         | 4,385                         | 1.83                            |
| 1830         | 8,265                         | 5,772                         | 1.43                            |
| 1840         | 8,660                         | 7,597                         | 1.14                            |
| 1850         | 10,000                        | 10,000                        | 1.00                            |
| 1855         | 12,680                        | 11,470                        | 1.11                            |
| 1860         | 15,370                        | 13,160                        | 1.17                            |
| 1865         | 17,795                        | 15,100                        | 1.18                            |
| 1870         | 20,335                        | 17,320                        | 1.17                            |
| 1875         | 22,555                        | 19,880                        | 1.13                            |
| 1876         | 22,973                        | 20,435                        | 1.12                            |
| 1877         | 23,428                        | 21,005                        | 1.12                            |
| 1878         | 23,900                        | 21,591                        | 1.11                            |
| 1879         | 24,319                        | 22,193                        | 1.10                            |
| 1880         | 24,735                        | 22,800                        | 1.08                            |
| 1881         | 25,146                        | 23,448                        | 1.07                            |
| 1882         | 25,525                        | 24,102                        | 1.06                            |
| 1883         | 25,884                        | 24,774                        | 1.04                            |
| 1884         | 26,272                        | 25,465                        | 1.03                            |
| 1885         | 26,650                        | 26,160                        | 1.02                            |
| 1886         | 27,046                        | 26,890                        | 1.01                            |
| 1887         | 27,433                        | 27,640                        | 0.99                            |
| 1888         | 27,836                        | 28,411                        | 0.98                            |
| 1889         | 28,272                        | 29,204                        | 0.97                            |
| 1890         | 28,775                        | 30,010                        | 0.96                            |
| 1891         | 29,266                        | 30,847                        | 0.95                            |
| 1892         | 29,823                        | 31,708                        | 0.94                            |
| 1893         | 30,424                        | 32,593                        | 0.93                            |
| 1894         | 31,124                        | 33,502                        | 0.93                            |
| 1895         | 31,885                        | 34,430                        | 0.93                            |
| 1896         | 32,670                        | 35,391                        | 0.92                            |
| 1897         | 33,596                        | 36,378                        | 0.92                            |
| 1898         | 34,733                        | 37,392                        | 0.93                            |
| 1899         | 35,951                        | 38,435                        | 0.94                            |
| 1900         | 36,975                        | 39,510                        | 0.94                            |
| 1901         | 37,970                        | 40,612                        | 0.93                            |
| 1902         | 39,140                        | 41,745                        | 0.94                            |
| 1903         | 40,438                        | 42,910                        | 0.94                            |
| 1904         | 41,815                        | 44,107                        | 0.95                            |
| 1905         | 43,336                        | 45,520                        | 0.96                            |
| 1906         | 44,970                        | 46,584                        | 0.97                            |
| 1907         | 46,614                        | 47,884                        | 0.97                            |
| 1908         | 48,381                        | 49,220                        | 0.98                            |
| 1909         | 50,192                        | 50,593                        | 0.99                            |
| 1910         | 52,003                        | 52,000                        | 1.00                            |

CURVES REPRESENTING INDICES OF BANK CLEARINGS IN LONDON AND NEW YORK, 1870-1910.<sup>1</sup>

| Year.        | London.  |   | New York.   |   |
|--------------|--|---|---|---|
|              | <i>Clearings Divided<br/>by the Absolute<br/>Gold Supply</i> | <i>In Percentages<br/>of the<br/>Average.</i> | <i>Clearings Divided<br/>by the Absolute<br/>Gold Supply.</i> | <i>In Percentages<br/>of the<br/>Average.</i> |
| 1870         | 192  | 79  | 137   | 98  |
| 1871         | 231  | 95  | 141   | 101   |
| 1872         | 278  | 115   | 159   | 114   |
| 1873         | 286  | 118   | 164   | 117   |
| 1874         | 267  | 110   | 104   | 74  |
| 1875         | 248  | 102   | 111   | 79  |
| 1876         | 217  | 90  | 94  | 67  |
| 1877         | 214  | 88  | 106   | 71  |
| 1878         | 209  | 86  | 94  | 67  |
| 1879         | 202  | 83  | 104   | 74  |
| 1880         | 235  | 97  | 151   | 108   |
| 1881         | 255  | 105   | 194   | 139   |
| 1882         | 243  | 100   | 183   | 131   |
| 1883         | 228  | 94  | 156   | 111   |
| 1884         | 221  | 91  | 135   | 93  |
| 1885         | 206  | 85  | 95  | 68  |
| 1886         | 219  | 90  | 124   | 89  |
| 1887         | 223  | 92  | 128   | 91  |
| 1888         | 248  | 102   | 111   | 79  |
| 1889         | 269  | 111   | 123   | 88  |
| 1890         | 271  | 112   | 131   | 94  |
| 1891         | 232  | 96  | 116   | 83  |
| 1892         | 218  | 90  | 122   | 87  |
| 1893         | 214  | 88  | 113   | 81  |
| 1894         | 203  | 84  | 78  | 56  |
| 1895         | 238  | 98  | 89  | 64  |
| 1896         | 232  | 96  | 90  | 64  |
| 1897         | 223  | 92  | 93  | 66  |
| 1898         | 233  | 96  | 115   | 82  |
| 1899         | 256  | 106   | 159   | 114   |
| 1900         | 243  | 100   | 141   | 101   |
| 1901         | 253  | 104   | 203   | 145   |
| 1902         | 256  | 106   | 191   | 136   |
| 1903         | 250  | 103   | 175   | 125   |
| 1904         | 258  | 104   | 143   | 102   |
| 1905         | 283  | 117   | 212   | 151   |
| 1906         | 282  | 116   | 231   | 165   |
| 1907         | 273  | 113   | 205   | 146   |
| 1908         | 250  | 103   | 152   | 109   |
| 1909         | 269  | 111   | 198   | 141   |
| 1910         | 283  | 117   | 197   | 141   |
| Average: 242 |  |   | 140   |   |

<sup>1</sup> From the *Statistical Abstract for the United Kingdom* and the *Statistical Abstract for the United States*.

GERMAN AND ENGLISH DISCOUNT RATES (ANNUAL AVERAGES).<sup>1</sup>

| <i>Year.</i> | <i>Berlin.</i> |                | <i>London.</i> |                |
|--------------|----------------|----------------|----------------|----------------|
|              | <i>Bank.</i>   | <i>Market.</i> | <i>Bank.</i>   | <i>Market.</i> |
| 1872         | 4.29           | —              | 4.10           | —              |
| 1873         | 4.93           | —              | 4.79           | —              |
| 1874         | 4.38           | —              | 3.69           | —              |
| 1875         | 4.71           | —              | 3.23           | —              |
| 1876         | 4.16           | —              | 2.61           | —              |
| 1877         | 4.42           | —              | 2.90           | —              |
| 1878         | 4.34           | —              | 3.78           | —              |
| 1879         | 3.70           | —              | 2.51           | —              |
| 1880         | 4.24           | —              | 2.76           | —              |
| 1881         | 4.42           | —              | 3.40           | —              |
| 1882         | 4.54           | —              | 4.15           | —              |
| 1883         | 4.05           | —              | 3.57           | —              |
| 1884         | 4.00           | —              | 2.96           | —              |
| 1885         | 4.12           | —              | 2.93           | —              |
| 1886         | 3.28           | —              | 3.05           | —              |
| 1887         | 3.41           | —              | 3.38           | —              |
| 1888         | 3.32           | —              | 3.30           | —              |
| 1889         | 3.68           | 2.63           | 3.55           | 3.25           |
| 1890         | 4.52           | 3.78           | 4.54           | 3.71           |
| 1891         | 3.78           | 3.02           | 3.32           | 1.50           |
| 1892         | 3.20           | 1.80           | 2.52           | 1.33           |
| 1893         | 4.07           | 3.17           | 3.05           | 1.67           |
| 1894         | 3.12           | 1.74           | 2.11           | 1.69           |
| 1895         | 3.14           | 2.01           | 2.00           | 0.87           |
| 1896         | 3.66           | 3.04           | 2.48           | 1.52           |
| 1897         | 3.81           | 3.09           | 2.64           | 1.87           |
| 1898         | 4.27           | 3.55           | 3.25           | 2.65           |
| 1899         | 5.04           | 4.45           | 3.75           | 3.29           |
| 1900         | 5.33           | 4.41           | 3.96           | 3.70           |
| 1901         | 4.10           | 3.06           | 3.72           | 3.20           |
| 1902         | 3.32           | 2.19           | 3.33           | 2.99           |
| 1903         | 3.84           | 3.01           | 3.75           | 3.40           |
| 1904         | 4.22           | 3.14           | 3.30           | 2.70           |
| 1905         | 3.83           | 2.85           | 3.01           | 2.66           |
| 1906         | 5.15           | 4.04           | 4.27           | 4.05           |
| 1907         | 6.03           | 5.12           | 4.93           | 4.53           |
| 1908         | 4.76           | 3.52           | 3.01           | 2.31           |
| 1909         | 3.93           | 2.87           | 3.10           | 2.31           |
| 1910         | 4.35           | 3.54           | 3.72           | 3.18           |

<sup>1</sup> *Statistisches Jahrbuch für das Deutsche Reich.*

## OUTPUT OF PIG-IRON AND COAL.

| Year | <i>World.</i>                        |  | <i>Germany.</i>                      |  |
|------|--------------------------------------|--|--------------------------------------|--|
|      | <i>Pig-Iron (in<br/>1,000 tons).</i> | <i>Coal (in millions<br/>of tons).</i> | <i>Pig-Iron (in<br/>1,000 tons).</i> | <i>Coal (in millions<br/>of tons).</i> |
| 1865 | 9,100                                | 188                                    | 988                                  | 29                                     |
| 1866 | 9,656                                | 197                                    | 1,047                                | 28                                     |
| 1867 | 10,062                               | 203                                    | 1,114                                | 31                                     |
| 1868 | 10,707                               | 208                                    | 1,264                                | 33                                     |
| 1869 | 11,950                               | 218                                    | 1,413                                | 34                                     |
| 1870 | 12,260                               | 219                                    | 1,391                                | 34                                     |
| 1871 | 12,852                               | 237                                    | 1,564                                | 38                                     |
| 1872 | 14,843                               | 260                                    | 1,988                                | 42                                     |
| 1873 | 15,125                               | 280                                    | 2,241                                | 46                                     |
| 1874 | 13,916                               | 274                                    | 1,906                                | 47                                     |
| 1875 | 14,119                               | 283                                    | 2,029                                | 48                                     |
| 1876 | 13,962                               | 287                                    | 1,846                                | 50                                     |
| 1877 | 14,193                               | 294                                    | 1,933                                | 48                                     |
| 1878 | 14,536                               | 293                                    | 2,148                                | 51                                     |
| 1879 | 14,411                               | 312                                    | 2,227                                | 53                                     |
| 1880 | 18,584                               | 345                                    | 2,729                                | 59                                     |
| 1881 | 19,819                               | 365                                    | 2,914                                | 62                                     |
| 1882 | 21,555                               | 384                                    | 3,381                                | 65                                     |
| 1883 | 21,756                               | 410                                    | 3,470                                | 70                                     |
| 1884 | 20,464                               | 409                                    | 3,601                                | 72                                     |
| 1885 | 19,842                               | 407                                    | 3,687                                | 74                                     |
| 1886 | 20,813                               | 407                                    | 3,529                                | 74                                     |
| 1887 | 22,820                               | 434                                    | 4,024                                | 76                                     |
| 1888 | 24,031                               | 470                                    | 4,337                                | 82                                     |
| 1889 | 25,877                               | 485                                    | 4,525                                | 85                                     |
| 1890 | 27,870                               | 514                                    | 4,658                                | 89                                     |
| 1891 | 26,171                               | 532                                    | 4,641                                | 94                                     |
| 1892 | 26,917                               | 538                                    | 4,937                                | 93                                     |
| 1893 | 25,263                               | 528                                    | 4,986                                | 95                                     |
| 1894 | 26,032                               | 552                                    | 5,380                                | 99                                     |
| 1895 | 29,369                               | 583                                    | 5,465                                | 104                                    |
| 1896 | 31,289                               | 601                                    | 6,373                                | 112                                    |
| 1897 | 33,464                               | 631                                    | 6,881                                | 120                                    |
| 1898 | 36,455                               | 665                                    | 7,313                                | 128                                    |
| 1899 | 40,874                               | 727                                    | 8,143                                | 136                                    |
| 1900 | 41,384                               | 767                                    | 8,521                                | 150                                    |
| 1901 | 41,140                               | 789                                    | 7,880                                | 153                                    |
| 1902 | 44,730                               | 803                                    | 8,530                                | 151                                    |
| 1903 | 46,820                               | 878                                    | 10,018                               | 162                                    |
| 1904 | 46,220                               | 886                                    | 10,058                               | 169                                    |
| 1905 | 54,790                               | 914                                    | 10,875                               | 174                                    |
| 1906 | 56,660                               | 1,014                                  | 12,293                               | 194                                    |
| 1907 | 61,300                               | 1,117                                  | 12,875                               | 206                                    |
| 1908 | 48,800                               | 1,068                                  | 11,805                               | 215                                    |
| 1909 | 60,660                               | 1,110                                  | 12,645                               | 217                                    |
| 1910 | 66,200                               | 1,152                                  | 14,794                               | 222                                    |



TABLE VI

GOODS TRAFFIC ON GERMAN RAILWAYS (IN MILLIONS OF TONS).<sup>1</sup>

| <i>Year.</i> | <i>Capital<br/>Goods.</i> | <i>Other<br/>Goods.</i> | <i>Year.</i> | <i>Capital<br/>Goods.</i> | <i>Other<br/>Goods.</i> |
|--------------|---------------------------|-------------------------|--------------|---------------------------|-------------------------|
| 1886         | 23.9                      | 92.2                    | 1898         | 57.6                      | 179.1                   |
| 1887         | 27.6                      | 97.2                    | 1899         | 63.2                      | 188.7                   |
| 1888         | 31.0                      | 106.6                   | 1900         | 65.3                      | 203.6                   |
| 1889         | 34.6                      | 114.7                   | 1901         | 59.5                      | 203.9                   |
| 1890         | 34.7                      | 119.7                   | 1902         | 63.8                      | 203.9                   |
| 1891         | 35.2                      | 127.1                   | 1903         | 72.4                      | 218.7                   |
| 1892         | 35.8                      | 124.8                   | 1904         | 75.2                      | 225.1                   |
| 1893         | 36.3                      | 132.2                   | 1905         | 80.0                      | 241.0                   |
| 1894         | 39.2                      | 138.1                   | 1906         | 91.0                      | 257.9                   |
| 1895         | 40.8                      | 143.9                   | 1907         | 94.4                      | 269.6                   |
| 1896         | 48.1                      | 157.1                   | 1908         | 88.8                      | 275.0                   |
| 1897         | 52.3                      | 168.5                   | 1909         | 90.5                      | 279.9                   |

<sup>1</sup> *Statistisches Jahrbuch für das Deutsche Reich*. We take capital goods as being those classed as 7, 11-20, 31a, b, and 59; other goods consist of the remainder.

TABLE VII

## FACTORY WORKERS IN SWEDEN.\*

| <i>Year.</i> | <i>Capital-Producing<br/>Industries.</i> | <i>Other<br/>Industries.</i> | <i>Total</i> |
|--------------|--|------------------------------|--------------|
| 1896         | 92,414                                   | 109,879                      | 202,293      |
| 1897         | 101,619                                  | 118,583                      | 220,202      |
| 1898         | 109,733                                  | 135,987                      | 245,720      |
| 1899         | 116,275                                  | 141,251                      | 257,526      |
| 1900         | 119,597                                  | 145,882                      | 265,479      |
| 1901         | 114,451                                  | 147,778                      | 262,229      |
| 1902         | 113,438                                  | 149,806                      | 263,244      |
| 1903         | 117,351                                  | 153,806                      | 271,157      |
| 1904         | 119,064                                  | 158,789                      | 277,853      |
| 1905         | 116,843                                  | 164,152                      | 280,995      |
| 1906         | 124,678                                  | 171,130                      | 295,908      |
| 1907         | 128,021                                  | 175,008                      | 303,029      |
| 1908         | 121,082                                  | 174,310                      | 295,392      |
| 1909         | 115,186                                  | 174,019                      | 289,205      |

\* From *Bidrag till Sveriges officiella Statistik D. Fabriker och Handverk*. The following sections are counted as capital-producing industries in the Swedish report: Table 6 (5a); Rubrik 1 (8a); Rubrik 2, 3, 5, 13, 14 (10a), (11a), (11b); Rubrik 1(c); Rubrik 1, 2, 6, 7.

TABLE VIII

PERSONS INSURED AGAINST ACCIDENT IN THE GERMAN INDUSTRIAL  
UNIONS (IN THOUSANDS).<sup>1</sup>

| <i>Year.</i> | <i>Capital-Producing<br/>Industries.</i> | <i>Other<br/>Industries.</i> | <i>Total.</i> |
|--------------|--|------------------------------|---------------|
| 1888         | 1,865                                    | 2,455                        | 4,320         |
| 1889         | 2,145                                    | 2,598                        | 4,743         |
| 1890         | 2,214                                    | 2,712                        | 4,927         |
| 1891         | 2,322                                    | 2,771                        | 5,093         |
| 1892         | 2,275                                    | 2,803                        | 5,078         |
| 1893         | 2,313                                    | 2,856                        | 5,169         |
| 1894         | 2,324                                    | 2,920                        | 5,244         |
| 1895         | 2,370                                    | 3,039                        | 5,409         |
| 1896         | 2,553                                    | 3,182                        | 5,735         |
| 1897         | 2,753                                    | 3,290                        | 6,043         |
| 1898         | 2,918                                    | 3,399                        | 6,317         |
| 1899         | 3,110                                    | 3,548                        | 6,659         |
| 1900         | 3,214                                    | 3,715                        | 6,929         |
| 1901         | 3,052                                    | 3,832                        | 6,884         |
| 1902         | 3,032                                    | 4,068                        | 7,100         |
| 1903         | 3,189                                    | 4,277                        | 7,466         |
| 1904         | 3,365                                    | 4,484                        | 7,849         |
| 1905         | 3,539                                    | 4,657                        | 8,196         |
| 1906         | 3,772                                    | 4,854                        | 8,626         |
| 1907         | 3,905                                    | 5,113                        | 9,018         |
| 1908         | 3,719                                    | 5,199                        | 8,918         |
| 1909         | 3,691                                    | 5,313                        | 9,004         |

<sup>1</sup> *Statistisches Jahrbuch für das Deutsche Reich*. (Trade unions in the capital-producing industries are those numbered 2-11, 17, 43-54, 64.)

TABLE IX

AVERAGE ANNUAL PRODUCTIVE CAPACITY OF THE GERMAN  
BLAST FURNACES.<sup>1</sup>

| <i>Year.</i> | <i>Furnaces Existing<br/>at End of Year.</i> | <i>Furnaces<br/>Active.</i> | <i>Weeks Worked.</i> | <i>Average Annual<br/>Capacity per<br/>Furnace.</i> |
|--------------|--|-----------------------------|----------------------|---|
| 1872         | —  | 348                         | 13,676               | 7,560   |
| 1873         | —  | 379                         | 15,276               | 7,627   |
| 1874         | —  | 339                         | 11,776               | 8,418   |
| 1875         | —  | 289                         | 10,904               | 9,678   |
| 1876         | —  | 236                         | 9,160                | 10,481  |
| 1877         | —  | 212                         | 9,219                | 10,902  |
| 1878         | —  | 212                         | 9,056                | 12,332  |
| 1879         | —  | 210                         | 8,952                | 12,934  |
| 1880         | —  | 246                         | 10,975               | 12,930  |
| 1881         | —  | 251                         | 11,362               | 13,336  |
| 1882         | —  | 261                         | 12,087               | 14,545  |
| 1883         | 318  | 258                         | 11,760               | 15,342  |
| 1884         | 308  | 252                         | 11,071               | 16,912  |
| 1885         | 298  | 229                         | 10,758               | 17,824  |
| 1886         | 285  | 215                         | 9,445                | 10,427  |
| 1887         | 271  | 212                         | 10,011               | 20,902  |
| 1888         | 271  | 211                         | 10,103               | 22,323  |
| 1889         | 264  | 213                         | 10,436               | 22,545  |
| 1890         | 265  | 222                         | 10,480               | 23,114  |
| 1891         | 270  | 218                         | 10,322               | 23,380  |
| 1892         | 266  | 215                         | 10,103               | 25,410  |
| 1893         | 263  | 204                         | 9,747                | 26,600  |
| 1894         | 258  | 208                         | 9,878                | 28,320  |
| 1895         | 263  | 212                         | 9,929                | 28,610  |
| 1896         | 265  | 229                         | 10,846               | 30,550  |
| 1897         | 273  | 244                         | 11,661               | 30,680  |
| 1898         | 281  | 253                         | 11,587               | 32,820  |
| 1899         | 285  | 263                         | 12,806               | 33,060  |
| 1900         | 298  | 274                         | 13,252               | 33,430  |
| 1901         | 309  | 263                         | 11,517               | 35,580  |
| 1902         | 289  | 241                         | 10,946               | 40,520  |
| 1903         | 293  | 254                         | 12,546               | 41,520  |
| 1904         | 297  | 254                         | 11,930               | 43,840  |
| 1905         | 308  | 277                         | 12,914               | 43,790  |
| 1906         | 315  | 288                         | 14,125               | 45,255  |
| 1907         | 324  | 303                         | 14,780               | 45,298  |
| 1908         | 331  | 280                         | 12,596               | 48,733  |
| 1909         | 334  | 279                         | 12,811               | 51,320  |

<sup>1</sup> *Statistisches Jahrbuch für das Deutsche Reich.*

TABLE X

SHIPPING TONNAGE AND SHIPBUILDING IN ENGLAND.<sup>1</sup>

| <i>Year.</i> | <i>Tonnage of Incoming Ships (millions).</i> | <i>Tonnage of Ships Built (tens of thousands).</i> | <i>Year.</i> | <i>Tonnage of Incoming Ships (millions).</i> | <i>Tonnage of Ships Built (tens of thousands).</i> |
|--------------|--|--|--------------|--|--|
| 1854         | 19   | —  | 1882         | 61   | 78   |
| 1855         | 18   | —  | 1883         | 65   | 89   |
| 1856         | 22   | —  | 1884         | 64   | 59   |
| 1857         | 23   | —  | 1885         | 64   | 44   |
| 1858         | 22   | 24   | 1886         | 63   | 33   |
| 1859         | 23   | 21   | 1887         | 65   | 38   |
| 1860         | 25   | 23   | 1888         | 69   | 57   |
| 1861         | 27   | 21   | 1889         | 72   | 85   |
| 1862         | 27   | 26   | 1890         | 74   | 81   |
| 1863         | 27   | 38   | 1891         | 75   | 81   |
| 1864         | 27   | 42   | 1892         | 76   | 80   |
| 1865         | 29   | 45   | 1893         | 75   | 58   |
| 1866         | 31   | 38   | 1894         | 81   | 67   |
| 1867         | 33   | 31   | 1895         | 81   | 65   |
| 1868         | 34   | 36   | 1896         | 85   | 74   |
| 1869         | 35   | 39   | 1897         | 90   | 64   |
| 1870         | 37   | 39   | 1898         | 91   | 87   |
| 1871         | 42   | 39   | 1899         | 98   | 95   |
| 1872         | 43   | 47   | 1900         | 99   | 94   |
| 1873         | 44   | 45   | 1901         | 97   | 98   |
| 1874         | 45   | 60   | 1902         | 99   | 95   |
| 1875         | 46   | 47   | 1903         | 105  | 76   |
| 1876         | 51   | 38   | 1904         | 108  | 88   |
| 1877         | 52   | 45   | 1905         | 112  | 105  |
| 1878         | 52   | 47   | 1906         | 121  | 114  |
| 1879         | 53   | 41   | 1907         | 133  | 104  |
| 1880         | 59   | 47   | 1908         | 131  | 60   |
| 1881         | 58   | 61   |              |  |  |

<sup>1</sup> *British and Foreign Trade and Industry* (1854-1908), Cmd. 4954, London, 1909.

TABLE XI

INDEX NUMBERS OF WHOLESALE PRICES OF PIG-IRON, BRICKS, AND  
TIMBER (CUT) IN GREAT BRITAIN, 1871-1908.<sup>1</sup>

| <i>Year.</i> | <i>Pig-Iron.</i> | <i>Bricks.</i> | <i>Timber (cut).</i> |
|--------------|------------------|----------------|----------------------|
| 1871         | 72.1             | 91.7           | 159.1                |
| 1872         | 119.7            | 100.0          | 163.0                |
| 1873         | 148.0            | 116.7          | 176.6                |
| 1874         | 111.9            | 100.0          | 179.9                |
| 1875         | 86.3             | 91.7           | 157.1                |
| 1876         | 74.2             | 91.7           | 159.1                |
| 1877         | 68.2             | 91.7           | 155.2                |
| 1878         | 63.7             | 83.3           | 135.7                |
| 1879         | 61.3             | 70.0           | 118.2                |
| 1880         | 76.1             | 75.0           | 134.4                |
| 1881         | 65.8             | 70.0           | 135.7                |
| 1882         | 66.8             | 83.3           | 139.0                |
| 1883         | 61.8             | 75.0           | 134.4                |
| 1884         | 54.7             | 75.0           | 119.5                |
| 1885         | 51.3             | 75.0           | 116.2                |
| 1886         | 50.6             | 75.0           | 102.6                |
| 1887         | 54.9             | 75.0           | 96.8                 |
| 1888         | 50.4             | 75.0           | 103.2                |
| 1889         | 59.5             | 75.0           | 114.9                |
| 1890         | 72.6             | 100.0          | 105.8                |
| 1891         | 62.4             | 91.7           | 97.4                 |
| 1892         | 61.2             | 91.7           | 97.4                 |
| 1893         | 55.7             | 83.3           | 90.9                 |
| 1894         | 54.6             | 83.3           | 87.0                 |
| 1895         | 56.9             | 83.3           | 88.3                 |
| 1896         | 56.7             | 83.3           | 92.2                 |
| 1897         | 57.3             | 83.3           | 93.5                 |
| 1898         | 62.5             | 91.7           | 95.5                 |
| 1899         | 82.6             | 100.0          | 94.2                 |
| 1900         | 100.0            | 100.0          | 100.0                |
| 1901         | 74.6             | 91.7           | 94.8                 |
| 1902         | 77.1             | 83.3           | 99.0                 |
| 1903         | 75.1             | 83.3           | 90.9                 |
| 1904         | 69.6             | 83.3           | 85.7                 |
| 1905         | 75.0             | 81.1           | 87.7                 |
| 1906         | 83.2             | 77.8           | 89.6                 |
| 1907         | 88.2             | 79.4           | 92.2                 |
| 1908         | 75.3             | 81.1           | 87.7                 |

<sup>1</sup> *British and Foreign Trade and Industry (1854-1908)*, Cmd. 4954, London, 1909.

TABLE XII

SAUERBECK'S INDEX NUMBERS OF MINERALS AND OTHER ARTICLES,  
DIVIDED BY THE FIGURES OF THE RELATIVE STOCK OF GOLD.

| <i>Year.</i> | <i>Minerals.</i> | <i>Other<br/>Articles.</i> | <i>Year.</i> | <i>Minerals.</i> | <i>Other<br/>Articles.</i> |
|--------------|------------------|----------------------------|--------------|------------------|----------------------------|
| 1870         | 76.3             | 83.5                       | 1891         | 80.6             | 74.6                       |
| 1871         | 80.3             | 84.6                       | 1892         | 75.9             | 71.9                       |
| 1872         | 109.1            | 89.1                       | 1893         | 73.3             | 72.9                       |
| 1873         | 122.9            | 92.0                       | 1894         | 68.4             | 67.6                       |
| 1874         | 100.6            | 86.4                       | 1895         | 67.1             | 67.0                       |
| 1875         | 89.4             | 83.7                       | 1896         | 68.7             | 65.5                       |
| 1876         | 80.4             | 84.6                       | 1897         | 71.2             | 66.3                       |
| 1877         | 75.4             | 85.7                       | 1898         | 75.8             | 67.7                       |
| 1878         | 66.9             | 81.2                       | 1899         | 97.9             | 68.1                       |
| 1879         | 66.6             | 77.4                       | 1900         | 115.9            | 73.7                       |
| 1880         | 72.6             | 82.5                       | 1901         | 94.9             | 71.4                       |
| 1881         | 71.4             | 80.2                       | 1902         | 87.8             | 71.7                       |
| 1882         | 74.6             | 80.0                       | 1903         | 87.3             | 71.3                       |
| 1883         | 72.7             | 79.7                       | 1904         | 86.1             | 71.9                       |
| 1884         | 65.9             | 74.8                       | 1905         | 91.4             | 72.8                       |
| 1885         | 64.9             | 71.6                       | 1906         | 105.1            | 75.3                       |
| 1886         | 66.2             | 68.9                       | 1907         | 110.1            | 76.7                       |
| 1887         | 70.0             | 68.6                       | 1908         | 90.5             | 71.5                       |
| 1888         | 79.6             | 70.4                       | 1909         | 87.0             | 72.7                       |
| 1889         | 77.8             | 74.1                       | 1910         | 88.8             | 75.8                       |
| 1890         | 83.9             | 73.1                       |              |                  |                            |

TABLE XIII

PIG-IRON OUTPUT AND MARKET RATE OF DISCOUNT IN THE  
UNITED STATES.<sup>1</sup>

| <i>Year.</i> | <i>Pig-Iron Out-<br/>put (millions<br/>of tons).</i> | <i>Market<br/>Rate at<br/>New York.</i> | <i>Year.</i> | <i>Pig-Iron Out-<br/>put (millions<br/>of tons).</i> | <i>Market<br/>Rate at<br/>New York</i> |
|--------------|--|---|--------------|--|--|
| 1870         | 1,665  | 7.2                                     | 1891         | 8,280  | 5.87                                   |
| 1871         | 1,707  | 6.1                                     | 1892         | 9,157  | 4.46                                   |
| 1872         | 2,549  | 8.0                                     | 1893         | 7,125  | 7.11                                   |
| 1873         | 2,561  | 10.3                                    | 1894         | 6,658  | 3.40                                   |
| 1874         | 2,401  | 6.0                                     | 1895         | 9,446  | 3.87                                   |
| 1875         | 2,024  | 5.5                                     | 1896         | 8,623  | 5.88                                   |
| 1876         | 1,869  | 5.2                                     | 1897         | 9,653  | 3.87                                   |
| 1877         | 2,067  | 5.2                                     | 1898         | 11,774   | 4.23                                   |
| 1878         | 2,301  | 4.8                                     | 1899         | 13,621   | 4.28                                   |
| 1879         | 2,742  | 5.0                                     | 1900         | 13,789   | 4.73                                   |
| 1880         | 3,835  | 5.2                                     | 1901         | 15,878   | 4.48                                   |
| 1881         | 4,144  | 5.2                                     | 1902         | 17,821   | 5.04                                   |
| 1882         | 4,625  | 5.7                                     | 1903         | 18,009   | 5.54                                   |
| 1883         | 4,596  | 5.5                                     | 1904         | 16,497   | 4.29                                   |
| 1884         | 4,098  | 5.2                                     | 1905         | 22,992   | 4.33                                   |
| 1885         | 4,045  | 4.1                                     | 1906         | 25,307   | 5.63                                   |
| 1886         | 5,683  | 4.7                                     | 1907         | 25,781   | 6.28                                   |
| 1887         | 6,417  | 5.7                                     | 1908         | 15,936   | 4.62                                   |
| 1888         | 6,490  | 4.9                                     | 1909         | 25,795   | 3.92                                   |
| 1889         | 7,604  | 5.08                                    | 1910         | 27,304   | 5.07                                   |
| 1890         | 9,203  | 5.92                                    |              |  |  |

<sup>1</sup> Pohle, *Statistische Unterlagen*.

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